JUL 28 1930

"The Formation of State Associations Was but the Beginning of the Work Which the American Pharmaceutical Association Has Done to Touch the Life and the Problems of the Individual Pharmacist."

Vol. XIX, No. 7 JULY, 1930

JOURNAL OF THE AMERICAN PHARMACEUTICAL ASSOCIATION

TRADE MARK

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THE 79th ANNUAL MEETING OF THE AMERICAN PHARMACEUTICAL ASSOCIATION WILL BE HELD IN MIAMI, FLA., DATE TO BE NAMED.

The 1931 Meetings of the American Association of Colleges of Pharmacy, the National Association of Boards of Pharmacy, Conferences of Pharmaceutical Association Secretaries and of Pharmaceutical Law Enforcement Officials will also be held at Miami, same time and place.

For Association Roster and Roster of the Boards of Pharmacy, of Officers of Pharmaceutical Associations, Local Branches, see pages x, xii, xiv, etc.

Entered as second-class Matter, January 23, 1917, at the Post Office at Easton, Pa., under the Act of March 3, 1879. Acceptance for mailing at special rate of postage provided for in section 1103. Act of October 3, 1917; authorized July 10, 1918.

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REMARKS BY PRESIDENT WALTER A. BASTEDO

of the

U. S. P. CONVENTION—1930-1940.

Dr. Walter A. Bastedo, of New York, was elected President of the U. S. P. Convention XI, in Washington, and on being inducted into office he spoke in part as follows:

"IN electing me to this office it may be that you have thought it one of my functions to keep the peace, should there appear to be the slightest suspicion of combativeness among those concerned with the revision. If so, let me inform you that I am firmly of the belief that physiologically the simple life, the life without strife, leads only to degeneration. And I assure you that no one wishes more than I to hear expressed on both sides of every question candid opinions, so long as they are honest opinions. For we can never make progress by crying 'Peace at any price.'

"But that the work shall go on and shall not come to deadlock, quite frequently now as in the past must there be kindly and intelligent compromise, for *no one* of us is ever wholly right. Even the members of the Supreme Court of the United States, men of the highest intellect, divide on every question; but the whole country accepts the decision of the majority, and with the decision strife ceases, though not necessarily expression of opinion.

"It is the spirit that counts and I am sure that all of us have the one desire that *our* Pharmacopœia shall stand out as the highest book of standards in the world for those remedies and preparations and only those that are most approved by the outstanding members of the medical profession.

"You of the Revision Committee are essentially pharmacists, chemists, botanists and physicians. I myself have been in turn a pharmacist, a chemist, a botanist and a physician, and among the non-medical members of the Committee I recognize many friends.

"May we not all accept the principle of broadmindedness and coöperativeness as our guide in the forthcoming revision and thus fulfil the trust that has been placed in us by the Convention here assembled?"

WILLIAM M. HANKINS.

JOURNAL OF THE AMERICAN PHARMACEUTICAL ASSOCIATION

VOL. XIX JULY, 1930 No. 7

THE PRESIDENT OF THE NATIONAL ASSOCIATION OF BOARDS OF PHARMACY.

William Maxwell Hankins was born March 23, 1876, at Ellaville, Fla., on the banks of the world-famous Suwannee River. In 1883, his father, A. C. Hankins, moved to Bartow, Fla., where a few years later, he engaged in the drug business, and William became an assistant in the store. The young man continued his studies in high school and, later, studied pharmacy and chemistry under private tutors. The father died in 1894 and the son continued the business, established by the former, until 1902, when he purchased the store of William Atwood at Daytona Beach, Fla., incorporating the business under the name of Hankins Drug Company, of which he is the President.

Mr. Hankins was active in having a department of pharmacy established in the University of Florida; he is a Past-President of Florida Pharmaceutical Association; a former Vice-President of the National Association of Boards of Pharmacy; Chairman of its Seventh District, and has been a member of the Florida Board of Pharmacy for eight years.

Immediately after Miami was named for the next meeting of the AMERICAN PHARMACEUTICAL ASSOCIATION, he with his co-delegates at once took up the study of plans for that convention. On returning to his home town Mr. Hankins was tendered a banquet by the civic clubs, the Chamber of Commerce and pharmacists of Daytona Beach, joined by a number of Florida's prominent men of other sections, not only as an expression of esteem for the honored guest, but of appreciation of the selection of Florida as host of the A. PH. A., the National Association of Boards of Pharmacy, the American Association of Colleges of Pharmacy, and other closely related and affiliated bodies.

Mr. Hankins was married, in 1902, to Myra Knox Moore, of Americus, Ga. They have two daughters, Mura Maxine and Dorothy Louise, and one son, William M., Jr.

EDITORIAL

E. G. EBERLE, EDITOR 10 West Chase St., BALTIMORE, MD.

THE NATIONAL INSTITUTE OF HEALTH.

THE U. S. Public Health Service had its foundation in the act of July 16, 1798—"An act for the relief of sick and disabled seamen." Its functions have been greatly enlarged and broadened, so that now it includes the protection of the national health in the various divisions of its great work. Pharmacists have always been interested in this Service and from time to time some of them have rendered outstanding service. Among them may be mentioned Oscar Oldberg who was appointed for duty in the Bureau of the Marine Hospital Service, now the Public Health Service, wherein he was Medical Purveyor. Reference may also be made to Henrik Gahn, who was appointed first hospital steward in 1878, and served until the time of his death in 1923; during the latter thirty years of his life he was Assistant Medical Purveyor. In more recent years the late Martin I. Wilbert served as Assistant Pharmacologist and as one of the editors of "The Digest of Comments on the U. S. Pharmacopœia;" he was succeeded by A. G. DuMez. It is therefore a source of satisfaction that pharmacists have been given deservedly better recognition than ever before in Government Service by the provisions of the Parker Bill, which is now law and coördinates the Public Health activities and broadens them. The name of the Advisory Board for the Hygienic Laboratory has been changed to the National Advisory Health Council.

Following closely the enactment referred to the Ransdell Bill was passed and by its provisions the National Institute of Health was created, which will have the advantage of the traditions of the Hygienic Laboratory in its development. In reality the Hygienic Laboratory becomes a national institute of health which, with enlarged facilities, will be devoted to investigations of the underlying problems not only of communicable diseases, but of degenerative diseases and environmental conditions affecting health. The general purposes of the Institute are to provide larger facilities for investigations of diseases and other matters pertaining to Public Health; to encourage research and the training of individuals engaged therein. An outstanding provision enables the Government to accept bequests and to coöperate with scientific institutions in the furtherance of research work.

Public Health investigations by the Bureau were first authorized in 1901 and since then wonderful progress has been made, leading to discoveries of great value bearing on the prevention and control of diseases. The National Institute of Health may accept gifts to be used for purposes designated by the donors. These gifts may be for the establishment of fellowships, which will doubtless encourage and attract individuals of ability and a scientific bent, in the interest of humanity. Herein pharmacists have an opportunity for outstanding service.

In this connection it might be stated that not only has the Surgeon General expressed his favorable opinion relative to the important service of pharmacy

but Senator Ransdell has spoken in a related way; hence, aside from its interest in everything that promotes public health service the AMERICAN PHARMACEUTICAL ASSOCIATION has been pleased to coöperate in the promotion of the measures commented on.

ORGANIZATION MEETING OF THE REVISION COMMITTEE OF THE NATIONAL FORMULARY VI.

THE National Formulary VI Revision Committee held its first meeting at the Westlake Hotel, Rocky River, Cleveland, Ohio, on June 30 and July 1, 1930. The following members of the Committee were present: E. N. Gathercoal, of Chicago, *Chairman;* Louis Saalbach, of Pittsburgh, *Vice-Chairman;* Adley B. Nichols, of Philadelphia, *Secretary;* H. V. Arny of New York; Gustav Bachman, of Minneapolis; I. A. Becker, of Chicago; Bernard Fantus, of Chicago; O. A. Farwell, of Detroit; S. L. Hilton, of Washington; G. L. Jenkins, of Baltimore; H. A. Langenhan, of Seattle; W. L. Scoville, of Detroit; L. A. Seltzer, of Detroit. E. L. Newcomb, of New York, and Paul S. Pittenger, of Philadelphia, were unable to be present. Dr. E. Fullerton Cook, of Philadelphia, Chairman of the U. S. P. Revision Committee, and thus an associate member of the N. F. Committee, was present; also, Chairman J. C. Krantz, Jr., of Baltimore, of the Committee on Unofficial Standards.

The Committee was organized into the following sub-committees:

1.—Sub-committee on Pharmacognosy, *Chairman* E. L. Newcomb, Oliver A. Farwell. 2.—Sub-committee on Chemicals, *Chairman* Glenn L. Jenkins, H. V. Arny, Gustav Bachman, H. A. Langenhan. 3.—Sub-committee on Solution Preparations, *Chairman* H. A. Langenhan, Gustav Bachman, I. A. Becker, Adley B. Nichols, Louis Saalbach, Bernard Fantus. 4.—Sub-committee on Extractive Preparations, *Chairman* Wilbur L. Scoville, Samuel L. Hilton, Louis Saalbach, H. A. Langenhan, Oliver A. Farwell. 5.—Sub-committee on Solid Preparations for Internal Use, *Chairman* I. A. Becker, Adley B. Nichols, Gustav Bachman, Wilbur L. Scoville. 6.—Sub-committee on External Preparations, *Chairman* Louis Saalbach, I. A. Becker, Adley B. Nichols, Leonard A. Seltzer, H. V. Arny. 7.—Sub-committee on Miscellaneous Preparations, *Chairman* Leonard A. Seltzer, E. L. Newcomb, Samuel L. Hilton, Wilbur L. Scoville. 8.—Sub-committee on Posology and Biologic Items, *Chairman* Bernard Fantus, Paul S. Pittenger, Glenn L. Jenkins. 9.—Sub-committee on Nomenclature and Tables, *Chairman* H. V. Arny, Bernard Fantus, Glenn L. Jenkins.

The Committee as a whole acts as the Committee on Scope, considering all admissions and deletions.

In addition to the foregoing, two auxiliary sub-committees were authorized: one on dental preparations, the other on veterinary preparations—the American Dental Association and the American Veterinary Medical Association being invited to appoint members from their respective organizations to work with the Committee in handling specific dental and veterinary items.

The Committee discussed scope and admission at length, and after an indecisive vote decided to present the matter of changing the policy on scope more fully in the *Bulletin of the Committee,* and decide the matter after consideration by mail. Professor E. Fullerton Cook, *Chairman* of the U. S. P. Committee on Revision, advocates the admission into the National Formulary of crude drugs

and chemicals which have considerable use, but which are not standardized in the United States Pharmacopœia nor employed in any of the galenicals of the National Formulary.

Item 2, as finally completed by the Committee, reads as follows: "*2. Policy for Admission.*—As the basis of admission to this Formulary is the use of the preparations by physicians, therapeutic value has not been the deciding factor. In admitting formulas, it is not the aim to provide imitations for proprietary or trademarked articles."

The Committee very carefully examined the extensive compilation of data obtained from hospital pharmacists, prescription pharmacists and retail druggists of the entire country, as to the extent of use of N. F. galenicals. Much credit is to be given to Editor Mayes of the *American Druggist* for his effort in reaching twenty thousand retail druggists by mail, to obtain the data on the use of N. F. galenicals in the retail drug stores of this country. The tentative list of deletions will be extensively published before final action is taken upon these deletions, and data on newer drugs and preparations will be acquired before the list of admissions is finally completed.

Each of the sub-committees has had opportunity for one or more meetings, in which plans have been laid for future work on the monographs.

This gathering of the National Formulary Committee affords splendid opportunity for acquaintanceship and social contacts among the members of the Committee. Dean Edward Spease and Professors Davy and Bacon of the School of Pharmacy of Western Reserve University entertained the Committee with an interesting trip on Wednesday morning, visiting some of the more important hospitals and prescription pharmacies of Cleveland, the School of Pharmacy and the botanical gardens of the college.—Adley B. Nichols, *Secretary.*

SURVEY AND STUDY OF DISTRIBUTION THROUGH DRUG STORE CHANNELS.

A CONFERENCE of the representatives of various associations was held in Washington, June 30th, at the Department of Commerce. Assistant Secretary Klein and Dr. Surface of the Department of Commerce, were present. Practically all industries and organizations contributing to drug-trade activities, professional and commercial, were represented. The names of the delegates and others in attendance, as far as we have them, were:

Charles E. Caspari, St. Louis; Carl A. Jones, Bristol, Va.; C. C. Merrell, Cincinnati; W. L. Crounse, Washington, D. C.; S. L. Hilton, Washington, D. C.; John G. Searle, Chicago, Ill.; W. S. Hays, Philadelphia; J. M. Drescher, St. Louis; A. W. Pauley, St. Louis; Junior Owens, Washington, D. C.; R. E. L. Williamson, Baltimore; W. L. Davis, New York City; Fred Rasmussen, Harrisburg, Pa.; Walter W. Hicks, Washington, D. C.; A. C. Taylor, Washington, D. C.; Robert L. Lund, St. Louis, Mo.; Julius H. Riemenschneider, Chicago; M. G. Gibbs, Washington, D. C.; C. F. E. Luce, Grand Rapids, Mich.; Lewis B. McIl-

henney, Philadelphia; L. L. Walton, Williamsport, Pa.; W. S. Hays, Philadelphia; Carl F. G. Meyer, St. Louis, Mo.; J. Otto Kohl, Cincinnati; James H. Howe, St. Louis, Mo.; A. D. Kunze, New York City; L. C. Blunt, Denver, Colo.; W. H. Lamont, St. Louis; E. F. Kelly, Baltimore.

The conference gave consideration to the advisability of requesting the Department of Commerce to make a survey and study of distribution through drug store channels. After a thorough discussion of the subject it was decided that the survey be made in St. Louis.

The resolutions passed and adopted unanimously expressed the sense of the conference that a survey and study should be made for the purpose of improving the methods practiced and policies in trade activities.

Resolutions relating to organization adopt the name of the organization as the "National Drug Store Survey Committee," and the objects expressed were to organize and carry out the survey and study the distribution through drug channels in coöperation with other industrial organizations and the U. S. Department of Commerce; also, that the Committee shall be made up of members appointed by national organizations, relating to the activities indicated and made up by one representative of each association.

An Executive Committee was provided for to act in the interim of meetings and also a Survey Committee to have charge of the survey to be made and Finance Committee to provide the funds necessary for the work.

A resolution was adopted asking the U. S. Department of Commerce to take charge of a survey.

The following officers were elected: *Chairman*, Robert L. Lund, St. Louis; *Vice-Chairman*, R. E. L. Williamson, Baltimore; *Secretary*, W. H. Lamont, St. Louis; *Treasurer*, Julius Riemenschneider, Chicago.

According to the tentative plan, the fundamental phases of the survey include five major classes of information, namely: 1.—Costs; 2.—Retail Prices and Store Management; 3.—Wholesale and Manufacturing Costs; 4.—Study of Credit Conditions and Causes of Business Failures; 5.—Market Survey.

In addition to the information which is to be gathered from about ten stores in St. Louis, including chain store units, it is planned to select one or more stores recognized as very high class and successful independent establishments, which will be studied as examples of good merchandising.

The intention is to find out a great many things about a few stores in one city rather than a few things about numerous stores scattered about the country. It is felt that the timing of the several parts of the study is essential. To a certain extent, and perhaps largely so, the line of survey followed in Louisville of the grocery stores, will serve the purpose in this survey. As stated, the proposed survey is to be strictly a study of merchandising, comprising analyses of cost and profit, elements of efficient operation and related factors. The research will be so directed as to supplement rather than duplicate related investigation in the field, such as those of the Druggists' Research Bureau and the National Census of Distribution. The study made in St. Louis will be applicable to other cities and serve a most useful purpose for the improvement of methods, practices and policies in the drug-trade activities.

THE AMERICAN INSTITUTE OF PHARMACY.*

AN ADDRESS BY DR. H. S. WELLCOME,[1] LONDON.

Mr. President and Fellow Members of the American Pharmaceutical Association.—I much regret that in recent years it has not been possible for me to attend the Annual Meetings as often as I wished. However, as a life member for many years, I have never ceased to feel a deep interest in the development and progress of the ASSOCIATION, and have followed closely its admirable work.

It is very encouraging and gratifying to observe the increased progressive spirit manifested in the activities since my last attendance four years ago. It is, indeed, refreshing to see so many virile young men taking a part in the work of the ASSOCIATION.

President Dunning has requested me to make some remarks and offer suggestions regarding the projected American Institute of Pharmacy and the headquarters building.

The plans proposed by Dr. Dunning, Secretary Kelly and their associates on the Committee, are, to my mind, practicable and most admirable. Furthermore, we owe them a deep debt of gratitude for the splendid efforts they have made to finance this proposition. Their success in raising funds for carrying out this scheme is remarkable, especially when we consider the financial conditions which have prevailed during the past several years. I beg you, however, not to forget that still more funds are urgently needed for properly completing this most important undertaking, and to complete it in a manner worthy of our great purpose.

I hope most earnestly that every member of the ASSOCIATION will realize and appreciate the immense benefits to be derived from the consummation of these plans. The lofty aims of this project should commend it to every pharmacist, for its success will mean the regeneration of the practice of pharmacy as a scientific profession, based on ethical standards. Such regeneration will secure to professional scientific pharmacists proper recognition amongst the learned professions.

To-day the world appears to be at the beginning of a new era, with amazing discoveries and new developments in every branch of science.

On every hand we see marvelous inventions in mechanics, notably air flight, radio, television, etc., all leading to anticipation of still greater discoveries in the near future; but, in participating in this great advance, we are most concerned in the recent wonderful scientific discoveries associated with the healing art, such as medicine, surgery, chemistry, bacteriology, pharmacy, etc.

This great awakening of the mental faculties of man, unraveling for us the infinite secrets of nature, indicates unlimited possibilities of continuous advancement. These marvelous achievements should arouse and inspire us to use wisely the talents God has given us—that we may win the goal and accomplish much in our field of operations for the betterment of mankind.

In these days no one can afford to stand still with closed eyes. All departments of science are in the race, and we are merely at the beginning.

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* See Minutes of the House of Delegates, June JOUR. A. PH. A., page 642.

[1] Founder of the Museum of Medical Science and of the Wellcome Historical Medical Museum, London.

All pharmacists are deeply concerned in the possibilities of these scientific developments, and should realize the vital importance of keeping abreast of this mighty wave of progress.

Those who are inspired with lofty ambitions must qualify themselves for the attainment of higher scientific standards, and will thus deserve and secure due recognition by the medical profession and the scientific world generally.

The Government officials in Washington who are responsible for advising on the allotment of sites in the specially reserved locations, have assured us that they realize the national importance of the activities of the American Institute of Pharmacy for the advancement of science and the raising of the status of professional pharmacy. They also manifest appreciation of the advantages of having the headquarters building with permanent officials located in Washington, as this will facilitate intercourse with Government departments in respect to legislation and other important official matters affecting the interest of pharmacists.

The location selected for the proposed building is unique and certainly one of the most beautiful sites in Washington, being situated close to the Academy of Science and directly facing the Lincoln Memorial.

The authorities are favorable to this project, but they require that the building on this selected site must be architecturally imposing and worthy of being grouped with the Lincoln Memorial and other stately buildings which surround it.

For generations this building will remain a noble temple of scientific pharmacy. Therefore, it should be adequate to provide for future developments.

Incidentally, I might mention that this site provides solid surface rock foundation which will greatly lessen the cost of construction.

Washington has become a Mecca to which people make pilgrimages from all parts of America and of the world, and the home of the Institute should be one to compel attention and command respect.

President Dunning has requested me to make some suggestions regarding a museum in the headquarters building.

The dimensions of the building indicated in the tentative sketch design are, I believe, inadequate, especially when we look to the future.

I believe it to be of great practical and scientific importance that adequate space should be set apart for two museums.

One museum should contain a complete collection of materia medica specimens of the highest grade to serve as standards of quality for the purpose of comparison and test; and as complete a collection as possible of specimens of lower grades of materia medica of inferior quality and specimens that are adulterated or sophisticated, also for the purpose of comparison and test.

A collection of standardized medical, chemical and pharmaceutical products would also be of great value for the purpose of comparison and test.

Such a museum of materia medica, medicinal, chemical and pharmaceutical products, for comparison and test, would be invaluable to research workers and to pharmacists generally.

I have no doubt the materia medica departments of the colleges of pharmacy throughout the United States would be glad to coöperate and perhaps present these specimens to the American Institute of Pharmacy.

As to the second museum, I suggest that the American Institute of Pharmacy

should have an historical pharmacy museum in the headquarters building. There is in America a rare opportunity to secure historical pharmacy material connected with the practice of pharmacy from the time of the earliest settlements in the new world. Such opportunities do not exist in the countries of Europe where history goes back for thousands of years, and where comparatively few objects from the most ancient periods have been preserved. You have here a chance to make collections of historical objects of surpassing interest. The ideal place for such a museum is in this building.

The Library of the American Institute of Pharmacy should be as complete as possible in technical and historical works relating to pharmacy, chemistry and allied subjects, and would be one of the most important features of this institution. The educative value of such a library cannot be over-estimated.

In regard to the museum and library great care should be taken to avoid exposure to the direct rays of the sun. Manuscripts, printed books, materia medica and other museum specimens are liable to be seriously damaged and even destroyed if strict precautions are not taken in this respect.

I want to make this suggestion: that in this museum there should be a gallery where the portraits of those who have done great things in the development of pharmacy and to whom we owe so much should be placed after they have passed away. None should be placed there by special favor, but only for real merit and beneficial service to mankind.

Practical Research Laboratories with up-to-date equipment are not only desirable but necessary in association with such an institution as this. For various practical reasons they should not be housed in the main building, but should be completely isolated. The preferred practice now in buildings for such purposes as the American Institute of Pharmacy is to have the laboratories, chemical and bacteriological, in an isolated building, thus avoiding fumes and danger from combustible and explosive material, as well as infection from bacteria.

This is a noble and worth-while project.

I earnestly appeal to the members of the ASSOCIATION to wholeheartedly support Dr. Dunning by contributing liberally to this fund. You cannot carry out a scheme like this without money.

Every individual member of the AMERICAN PHARMACEUTICAL ASSOCIATION should feel a deep personal interest and pride in this project, and should do his utmost to assist the committee in raising the necessary funds.

The membership of the AMERICAN PHARMACEUTICAL ASSOCIATION to-day is very large and represents vast assets in capital and income which are increasing year by year.

The population of the United States to-day is more than one hundred and twenty million. Soon the population will be doubled, and it is not difficult to vision the time when it will be trebled and even quadrupled.

While the population and wealth of the nation increases, the number of pharmacists will certainly be quite as rapidly multiplied.

From the practical business side of pharmacy, I believe that every cent contributed to this undertaking will yield many fold in helping to translate our ideals into actualities.

Unless there is a regeneration and a real advancement in the practice of pharmacy along ethical, scientific and professional lines, there will be little hope for young men of intellect who have healthy ambitions for pharmaceutical careers.

The success of the project of the American Institute of Pharmacy will beautifully meet the demands of the situation.

EDITOR'S NOTE: The following from the "Eleventh Report of the National Commission of Fine Arts," recently issued, are of interest in connection with Dr. Wellcome's address:

AMERICAN INSTITUTE OF PHARMACY.

"The AMERICAN PHARMACEUTICAL ASSOCIATION has completed its plans to erect and endow a building to house its organization activities, including a reference library, a historical museum and a research laboratory, all devoted to the advancement of the profession of pharmacy.

"By a vote of the members of the ASSOCIATION, Washington was chosen as the location of this institution, and the property facing on B Street NW between Twenty-Second and Twenty-Third Streets has been selected as the site. Mr. John Russell Pope has been chosen as the architect of the building, which will be a notable addition to the group of buildings along the Mall devoted to the fine arts, science and education.

"The Commission of Fine Arts has been consulted frequently about the design and location of this building, which will be the first of the monumental buildings along B Street to be seen from the Arlington Memorial Bridge and which will be a very important part of the frame of the Lincoln Memorial.

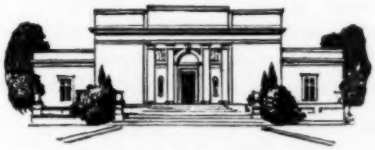
"The design of the building, as prepared by Mr. Pope, conforms to the ideals of the commission, and the commission has approved the design and the plans for its location. The front of the building will be in line with that of the National Academy of Sciences in the adjoining square, and the grounds in front will be treated as those of the academy have been."

A FRAME FOR THE LINCOLN MEMORIAL.

"The elevation of B Street into a monumental thoroughfare, leading from the Capitol westward to the Potomac, a distance of approximately $2^1/_2$ miles, calls for exceptional care in regard to the treatment of the north side of B Street west of Seventeenth Street (from the Pan American Building to the river). Of the five squares composing this frontage, two are owned by the Government and two are in private hands.

"When the National Academy of Sciences was considering the purchase of a site and the erection of a building, the matter was discussed with the Commission of Fine Arts. It was then determined that the building and grounds should be treated as a portion of a frame for the Lincoln Memorial. With that end in view the building, designed with classical motives, constructed of white marble, should be set well back from the street, with ample gardens in front; this to serve as an example and to establish a standard for other construction in the same area. The result is eminently satisfactory.

"Next this commission learned that a portion of the frontage near Twenty-Third Street had been bought by the AMERICAN PHARMACEUTICAL ASSOCIATION. The organization submitted their design for a building to this commission; it was promptly approved with the understanding that, provided the ASSOCIATION would purchase the remaining frontage in the block, the commission would recommend to Congress the closing of the sub-end of a street in order that their building might be made to line up with the Sciences Building and so preserve the symmetry of the street. In this suggestion the ASSOCIATION promptly acquiesced."



THE AMERICAN INSTITUTE OF PHARMACY.

SCIENTIFIC SECTION

THE PHARMACOGNOSY, CHEMISTRY AND PHARMACOLOGY OF VIBURNUM.*

I. INTRODUCTION. HISTORY, BOTANY AND PHARMACOGNOSY OF VIBURNUM PRUNIFOLIUM L., VIBURNUM RUFIDULUM RAF., VIBURNUM CASSINOIDES L., AND VIBURNUM NUDUM L.

BY HEBER W. YOUNGKEN.

INTRODUCTION.

This investigation was prompted by the chaos existing in the literature relative to the value of Viburnum barks in the treatment of uterine disturbances and the uncertainty of the botanical sources of most of the barks used in the manufacture of preparations which were employed in animal tests.

In 1927, I presented an article upon *Viburnum cassinoides* (37). Work has been continued upon this and various other members of the *Viburnum* genus.

Working under a grant from the A. PH. A. Research Committee, authentic material has been collected by the author of the following: *Viburnum prunifolium* L., *Viburnum rufidulum* Raf., *V. cassinoides* L., *V. nudum* L., *V. Opulus* L. var. *americanum* (Miller) Aiton and *V. Lentago* L.

The plant materials collected were partly pressed in the field, partly preserved after collection in alcohol and in part dried by sun and by artificial heat.

A series of papers are now being prepared discussing the botanical, pharmacognostical, chemical and pharmacodynamic features of these species.

In the present communication the results of a preliminary study are given.

Pharmacognostic work was conducted only upon material which had been botanically authenticated, specimens of which have been permanently deposited in the herbarium of the Massachusetts College of Pharmacy, Boston.

HISTORICAL.

The genus Viburnum is described by Linnæus in his "Genera Plantarum" (1). Under this genus he includes the *Viburnum Tinus* and *Opulus* of Tournefort.

In his "Species Plantarum" (2), Linnæus groups the Viburnums under *Pentandria Trigynia.*

In his first edition of "Flora Virginica," Grovonius (3), describing plants which Clayton collected in Virginia, lists *Viburnum Prunifolium* under the title of "*Viburnum foliis subrotundis serratis glabris*" and describes it as "*Viburni species floribus albis umbellatim congestis, foliis Pruni, bacca molli atro-purpurea oblonga eduli, officulo duro compresso.*" His description is based upon Clayton's specimen No. 47. He gave it the synonym of Black Haw.

Linnæus (2) listed this plant in the first edition of his "Species Plantarum" and gave its habitat as Virginia and Canada. His description is based upon Grovinius' earlier account of this species. This species has been subsequently described by numerous authors including Gray, Sargent, Britton and Brown, Bailey, Small and Rehder.

Rehder (4) gives its distribution as from Connecticut to Florida west to Michigan and Texas and describes it as a "large shrub or small tree to 5 m. with rigid spreading branches; winter buds short-pointed, reddish pubescent; bracts glabrous; leaves broad-elliptic to ovate,

* This investigation was aided by a grant from the A. PH. A. Research Fund. Presented to the Scientific Section, A. PH. A., Rapid City meeting.

3–8 cm. long, acute or obtuse, rounded at base or broad-cuneate, serrulate, glabrous or nearly so; petiole not or narrowly winged, 8 to 16 mm. long; flowers pure white, in sessile cymes 5–10 cm. across; fruit short-ellipsoid to sub-globose, 8–12 mm. long, blue-black and bloomy."

Britton and Brown (5) give as its leading synonyms, "Black Haw," "Stag Bush" and "Sloe."

Rafinesque (6) in his "Alsographia Americana" first described *Viburnum rufidulum* as "*Viburnum* L. *rufidulum* Raf. *ramulis teretis fuscatis, petiolis marginatis rufo pubens ut nervis, fol. ovat. ellipt., obtusis, argente serratis, tenuis glabris; cymus sessilib. 3 fidis dilatatis rufo pubens*—sent me from Alabama, leaves large, 3 inches long, cyme ample, nearest to *V. Lentago;* is it a variety of it?"

Viburnum cassinoides is first described by Linnæus (7) as: "*Viburnum foliis ovatis crenatis glabris, petiolis eglandulatis carinatis. Folia infima obovata; proxima ovata, superiora lanceolata.*" He gives its habitat as North America.

The same author (2) was the first to describe *Viburnum Lentago.* His description of this species is based upon Kalm's specimen and is as follows: "*Viburnum foliis serrulatis ovatis acuminatis glabris, petiolis glandulosis.*" He gave its habitat as Canada.

Viburnum nudum appears to have been first described by Grovonius (3) who based his account of it upon Clayton's specimen No. 64, now in the British Museum. He described it as "*Opulus aquatica foliis subrotundis frondibus albis in umbellas dispositis, baccis atro-purpureis, officulo compresso.*"

Linnæus (2) later described it under *Viburnum nudum* as: "*Foliis integerrima lanceolato-ovatis. Tinus foliis ovatis in petiolos terminatis integerrimus. Cymae in hac nudae.*" He gave its habitat as Virginia.

Britton and Brown (5) call it the Larger or Naked Withe Rod, Bilberry, Nanny-berry and Possum- or Shawnee-Haw, and describe it as "a shrub sometimes 15 ft. high with oval, oval-lanceolate or obovate, entire or obscurely crenulate leaves (sometimes 9′ long) narrowed at the base, acute or obtuse at apex, more prominently veined than *V. cassinoides,* sometimes scurfy on the upper surface; peduncle equalling or exceeding the cyme."

Rehder (8) calls it the Smooth Withe Rod and gives its distribution as from Long Island to Florida, west to Kentucky and Louisiana.

Torrey and Gray (9) describe and list *Viburnum cassinoides* as *Viburnum nudum* var. *cassinoides.* This plant has likewise been described by Small, Gray, Britton and Brown, Rehder and other authors. Rehder (8) and Britton and Brown (10) call it the Withe Rod or Appalachian Tea. Rehder describes it as an "upright shrub to 2 m., occasionally to 4 m., similar to *V. nudum:* leaves elliptic or ovate to oblong, 3 to 10 cm. long, acute or bluntly acuminate, obscurely dentate or denticulate, dull green above, nearly glabrous, peduncle usually shorter than the cyme." He gives its distribution as from Newfoundland to Manitoba and Minnesota, south to North Carolina.

Viburnum Opulus is described by Linnæus (2) as "*Viburnum foliis lobatis; petiolis glandulosis.*" He gave its habitat as Europe.

Miller (11) in his "Gardener's Dictionary" first calls attention to an American variety of *Viburnum Opulus* which he describes as: "*Viburnum* (*Americanum*) *foliis cordato-ovatis acuminatis serratis, petiolis longissimus laevibus.* Wayfaring tree with heart-shaped, oval, acute-pointed, sawed leaves growing upon very smooth footstalks. American Guelder Rose with acute-pointed, sawed leaves and white flowers."

Miller in this same work also described *V. nudum, V. Opulus* and *V. cassinoides.* Aiton named this variety *Viburnum Opulus* L. var. *Americanum* Ait.

Marshall (12) describes a species corresponding to the *V. Opulus* of Linné and named it *Viburnum trilobum.*

Torrey and Gray (13) considered *Viburnum rufidulum* of Rafinesque a variety of *Viburnum prunifolium* and named it *Viburnum prunifolium* var. *ferrugineum.*

Small (14) again described this species in 1894 and gave it the name of *Viburnum ferrugineum.* In 1896 he assigned to it the name of *Viburnum tomentosum* (15).

Britton and Brown (16) and Rehder (4) have described and listed this species as *Viburnum rufidulum* Raf. or Southern Black Haw. Its distribution is given by Rehder as from Virginia to Florida, west to Illinois and Texas.

Sargent (18) describes this species in his "Manual of the Trees of North America" and calls attention to its greater abundance in Southern Arkansas, Western Louisiana and Eastern Texas.

In 1927, Rehder (19) readopted the name of *V. trilobum* Marsh. for the American variety of *Viburnum Opulus* and the synonym of Cranberry Bush. He describes it as "a shrub to 4 m. with gray branches; leaves broad-ovate, 5–12 cm. long, rounded or truncate at the base, lobes acuminate, coarsely dentate, sometimes the middle lobe elongated and entire, pilose on the veins beneath or nearly glabrous; petiole 1–3 cm. long with shallow groove and small, usually stalked glands; cyme 7–10 cm. across, on a stalk 1.5–3 cm. long; stamens about twice as long as corolla; fruit subglobose or short-ellipsoidal 8–10 mm. long, scarlet." He makes a separate species of *Viburnum Opulus* L. or the European Cranberry Bush (19).

Britton and Brown (20) make no distinction between *Viburnum Opulus* L. and *V. americanum* of Miller and other American authors, and give as the leading synonyms, Cranberry-tree, Wild Guelder-rose and High Bush Cranberry.

Viburnum Lentago has been more recently described by a number of authors including Gray, Britton and Brown, Bailey and Rehder. Rehder calls it Sheep-Berry and describes it (8) as "a shrub or small tree to 10 m. with slender branches; bracts slightly scurfy; winter buds gray, the terminal long pointed; leaves ovate to elliptic-obovate, 5–10 cm. long, acuminate, broad-cuneate to rounded at base, finely toothed, glabrous or scurfy on the veins beneath; petiole 1–2.5 cm. long, mostly winged with wavy margin; cymes 6–12 cm. broad, sessile; fruit ellipsoid, 1.2–1.5 cm. long, blue-black, bloomy." He gives its distribution as Hudson Bay to Manitoba south to Georgia and Mississippi. Britton and Brown (5) assign to it the synonyms of Nanny-berry, Sheep- or Sweet Berry and Sweet Viburnum and trace it as far west as Indiana, Kansas and Colorado.

RESEARCHES UPON MORPHOLOGY AND PHARMACOGNOSY OF VIBURNUMS.

Researches upon the morphology and pharmacognosy of the Viburnums have been fragmentary and scattered. Most of the investigations have been confined to the barks of medicinal members and in many there is no allusion to the authenticity of the material.

Sanio (21), in 1860, investigated the mode of formation of cork in *Viburnum Opulus* and showed that it developed beneath the epidermis. He also found stone cells in the bark of the different species of *Viburnum*.

Moeller (22), in 1876, described the wood of *Viburnum Opulus* and *Viburnum Lantana*.

Loebel, in 1882, observed the presence of arm-palisade parenchyma in *Viburnum Opulus* and Schwarz-Clements (23), in 1905, observed them in *V. pauciflorum*.

Michael (24), in 1885, showed that scalariform vessels occurred in several Viburnum species.

Sayre, in 1895 (25), described the bark of the trunk of *Viburnum Opulus* and of the trunk, small branches and root of *Viburnum prunifolium*. His material was partly from commercial sources and his description and figures of the stem bark of *Viburnum Opulus* resemble that of *Acer spicatum*.

The same author (26), in 1896, discussed and figured some differences between the powdered barks of the trunk, twigs and root of *Viburnum prunifolium* and *Viburnum Opulus*, but the authenticity of at least some of the material with which he worked is doubtful.

In 1898 Denniston (27) made some studies on the comparative structure of the stem barks of *Viburnum Lentago, V. dentatum, V. nudum, V. cassinoides, V. lantanoides* and *V. Opulus* and the root and stem bark of *V. prunifolium*. He

distinguishes the bark of *Viburnum Opulus* from that of the other species by the presence of smaller cells in all of its tissues and states that it is the only one of the Viburnum barks in which compact groups of bast fibres occur so abundantly. He found no bast fibres in *V. prunifolium* bark but states that there are of common occurrence in all the other species of *Viburnum* examined. His material of *V. Opulus* was apparently *Acer spicatum* bark.

The same worker (28), in 1902, described the structure of the bark of *Viburnum ellipticum*.

In 1902, Mitlacher (29) described the structure and constituents of Black Haw Bark (*V. prunifolium* L.). He called attention to the fact that stone cells, bearing considerable resemblance to bast fibres because of their axial elongation, are to be found in the cortex and bast ring. He also stated that primary bast fibres (pericyclic fibres) were to be found in young barks, but that these were eventually thrown off by the formation of secondary phellogen and that older barks are devoid of bast fibres. He also informs that the cells of the cortex and medullary rays contain a granular substance which is stained by alkanna and is converted by caustic potash into an emulsion containing yellow droplets of oil.

In 1905, Lloyd (30) writing under "Concerning Substitutes and Adulterations" in the *Pharmaceutical Review* stated:

> "The bark of all species of Wild Haw native to this country that supplies the drug for the market, is collected by root diggers, and sold under the name of Black Haw."

In 1908, Farwell (32) reported that the official black haw bark was more difficult to obtain than formerly, that it was necessary to reject samples of several large lots of bark which according to his correspondent represented material which had been generally supplied the trade for some time but without complaint.

The same year Solereder (31) called attention to the small peltate hairs occurring on the epidermis of *Viburnum Lentago* and *V. pyrifolium* which have a shield of 4–8 radially arranged cells, the basin-shaped nectarial glands on the petioles of *Viburnum Opulus* and on the lower laminar margin of *V. Tinus*. He referred to superficial cork formation in *V. Lantana* and *V. Lentago*, etc., in which the epidermis becomes the phellogen but states that in other species of *Viburnum*, *V. americanum* and *V. Opulus*, the phellogen is derived from the outermost cell layer of the primary cortex. He directed attention to the presence of bordered pits in the wood parenchyma of the genus *Viburnum* and to the petiole thickenings of the wall of the prosenchymatous cells of certain species.

Gunderson (39), in 1910, called attention to the pericyclic fibres forming almost a complete circle in *V. nudum*. He describes and figures glandular hairs in *V. Opulus* and non-glandular hairs in *Viburnum Opulus* and *V. Tinus*.

In 1913, Farwell (33) stated that as early as the 90's and until 1913 *Acer spicatum* bark was mistaken for true cramp bark or *Viburnum Opulus*. He gives the distinction between these barks.

In 1913, Farwell (33) described the structure of the leaves and histology of the bark of *Viburnum Opulus* grown in the United States. He considered it a variety of *V. Opulus* L. which he called *V. Opulus* L. var. *americanum* Aiton (17). He called attention to the fact that Mountain Maple bark (*Acer spicatum* L.) was being substituted for *Viburnum Opulus*.

Fig. 1.—*Viburnum prunifolium* Linné. Leaf and fruiting branch collected from shrub growing on outskirts of Asheville, N. C., June 1929.

In 1913, Holm (34) briefly described the internal structure of the vegetative organs of *Viburnum prunifolium*. He called attention to the presence of stereids in the leaf parenchyma of *V. prunifolium*, to a few isolated stereids in the pericycle of this species, to the diarch stele of the roots and to the presence of stellate and peltate hairs on the leaf, to the one pair of subsidiary cells parallel to the stomata which were very distinct for ordinary epidermal cells, each of which have prominent undulate walls.

In 1918, Viehoever, Ewing and Clevenger (35) investigated a number of commercial Viburnum barks and preparations. They examined 50 samples of commercial *V. Opulus* and found 48 of them to consist of the bark of *Acer spicatum*. Of 7 samples of Black Haw examined by these workers, two contained excessive wood and one was spurious. The same authors point out some of the diagnostic differential features between *V. Opulus*, *Acer spicatum* and *V. prunifolium* barks and give a tannin and a valerianic acid test to distinguish *Viburnum Opulus* and *V. prunifolium* from *Acer spicatum* barks and preparations.

In some suggestions for pharmacopœial revision in 1920, J. M. Francis (36) called attention to the fact that black haw bark then obtainable from collectors consisted almost wholly of the bark of the trunk and stems with only a very small percentage of the bark of the root.

In 1927, Youngken (37) described the macroscopic and microscopic features of the root and stem barks of *Viburnum cassinoides*, and pointed out the chief differences between these and similar barks of *Viburnum prunifolium*. In the

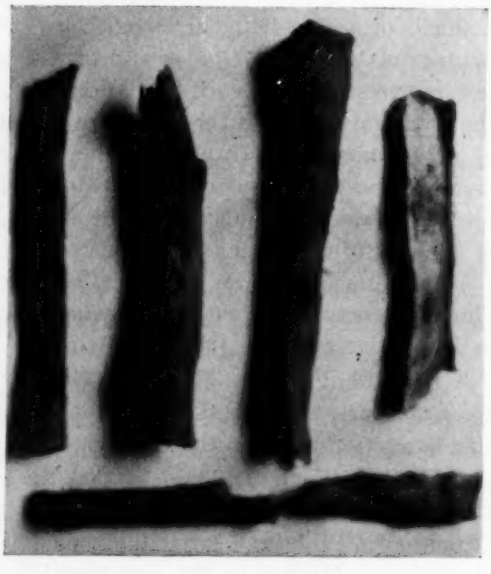


Fig. 2.—*Viburnum prunifolium*. Root bark.

same article he showed that 2 samples labeled "Shawnee Haw Bark" and 4 other samples labeled "Shonny Haw Bark" represented the barks of *Viburnum cassinoides*, rather than those of *Viburnum nudum*.

In 1929, while collecting authentic botanical material of a number of Viburnums in the Southern States, Youngken (38) came upon a number of trees of *Aronia melanocarpa* var. *grandifolia*, or Black Chokeberry, the bark of which had been collected by drug collectors as "Buck Shonny Haw" and offered to crude drug dealers as genuine Shonny Haw Bark. The distinguishing characters between this and genuine *V. cassinoides* or commercial Shonny Haw have been pointed out by this worker.

Botany and Pharmacognosy of Viburnum Species.

VIBURNUM PRUNIFOLIUM.

The material for investigation consisted of root and stem barks, roots, stems, leafy and fruiting branches of plants growing at Asheville, North Carolina, and collected by H. W. Youngken, June 12 to 17, 1929.

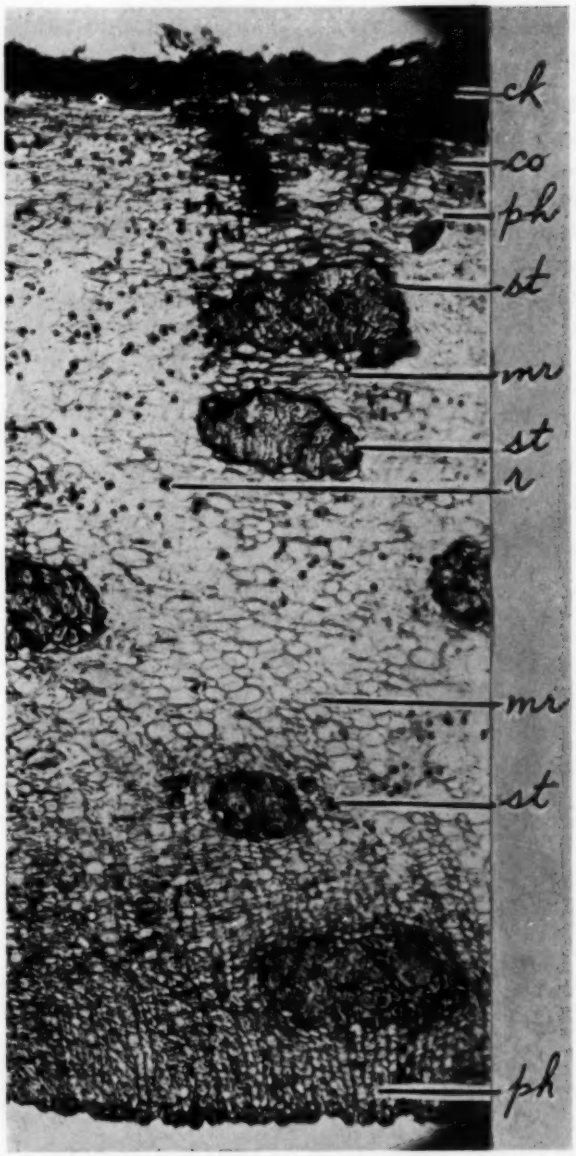


Fig. 3.—Photomicrograph of a cross section of *Viburnum prunifolium* root bark (×50), *ck*, cork; *co*, secondary cortex; *ph*, phloem; *st*, groups of stone cells; *r*, rosette crystal of calcium oxalate; *mr*, medullary ray.

DESCRIPTION OF VIBURNUM PRUNIFOLIUM L.

The plants from which the material was collected were large shrubs to small trees up to 15 feet in height with rigid spreading branches and dark bark. The leaves were broadly oval to ovate, 1 to 3 in. long, acute to obtuse at summit, rounded to broadly cuneate at base, serrulate along the margin and practically glabrous, the petioles being slender and up to 16 mm. in length. The fruits were oval, bluish black, glaucous drupes with a flattened stone and arranged upon sessile cymes.

DESCRIPTION OF ROOT BARK OF VIBURNUM PRUNIFOLIUM L.

The bark occurs in irregular, transversely curved or quilled pieces from 1.5 cm. to 9 cm. in length and from 0.5 mm. to 2 mm. in thickness. The outer surface is grayish brown or, where the outer cork has scaled off, brownish red, longitudinally wrinkled. The inner surface is pale yellowish to brownish red, longitudinally striate. The fracture is short and uneven, the fractured surface showing a grayish brown cork, a brownish to brownish red middle bark and a whitish inner bark in which a number of pale yellow groups of stone cells are discernible with the aid of a hand lens. The odor is strongly valeric acid-like, the taste bitter and astringent.

DESCRIPTION OF STEM BARK OF VIBURNUM PRUNIFOLIUM L.

In transversely curved, irregular or quilled pieces, 1.5 cm. to 15 cm. long and up to 3 mm. in thickness. Outer surface silvery gray on young bark with raised, circular lenticels, grayish brown to blackish on older bark, the old bark showing a thick cork divided into a large number of irregular areas by numerous intersecting fissures. Inner surface pale yellowish to reddish brown or pale yellow with reddish brown blotches and streaks, longitudinally striate. Fracture short and uneven showing a grayish to blackish outer bark, a greenish brown to reddish brown middle bark and a light brown to whitish inner bark in which scattered groups of pale yellowish stone cells may be discerned with the aid of a hand lens. Odor faintly valeric acid-like becoming somewhat slightly more pronounced when triturated with phosphoric acid. Taste astringent and bitter.

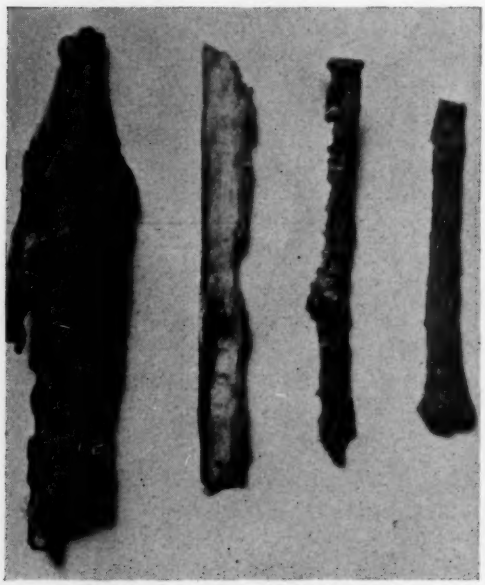


Fig. 4.—*Viburnum Prunifolium.* Stem bark.

HISTOLOGY OF ROOT BARK OF VIBURNUM PRUNIFOLIUM L.

The cork is of variable thickness and composed of somewhat lignified cork cells which are tangentially elongated in cross sections and polygonal in surface sections. The cork cells were up to 126 microns long and 54 microns broad as observed in cross sections, and many of them contained brownish contents. The phellogen exhibits tangentially-elongated cells with protoplasmic contents in cross sections.

The secondary cortex is a relatively narrow zone composed of tangentially-elongated parenchyma cells, some of which contain brownish amorphous masses, others either calcium oxalate in the form of rosette crystals or monoclinic prisms or tannin. Groups of stone cells with irregularly indented margins and isolated

stone cells are scattered through this region. Occasional rifts between parenchyma cells were noted in some of the sections.

The phloem is relatively broad and consists of a matrix of phloem parenchyma and sieve tubes separated into a number of oblong or curved phloem areas by medullary rays which, in cross sections run nearly straight or curve and converge in groups. Their passage outward is frequently interrupted by tangentially placed groups of stone cells.

The stone-cell groups are numerous in this region and frequently deeply notched. The groups measured up to 1360μ x 425μ, as observed in cross section. The individual stone cells are strongly lignified with prominent pore canals and rounded to irregular lumen, the latter frequently containing reddish to brownish contents. They measured up to 259.2μ in length and 90μ in width.

Rosette crystals of calcium oxalate, occurring in the cortex, phloem and medullary rays, were up to 54μ in diameter. The monoclinic prisms observed occurring in these same regions were considerably fewer than the rosette aggregates and up to 40μ in length. Numerous crystal fibres containing rosette crystals of calcium oxalate occur in phloem and cortex.

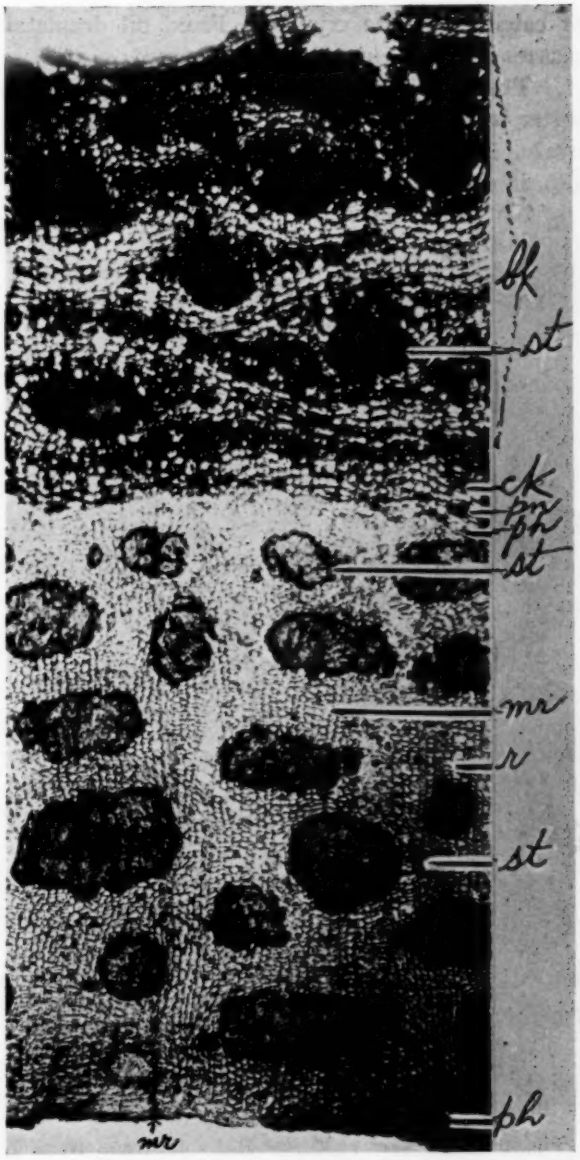


Fig. 5.—Photomicrograph of a cross section of older *Viburnum prunifolium* stem bark (×41), *bk*, borke; *ck*, cork; *pn*, secondary phellogen; *ph*, phloem; *st*, group of stone cells; *mr*, medullary ray; *r*, rosette aggregate of calcium oxalate. Note that secondary cork cambia (phellogens) have cut off a series of wavy cork layers in cortex, pericycle and outer phloem.

The medullary rays are 1 to 2 cells wide as observed in tangential-longitudinal sections and their cells contain either starch, tannin, brownish amorphous masses

or calcium oxalate crystals. Fixed oil droplets separated from the amorphous masses in chloral mounts.

The starch grains observed in scrapings of the bark mounted in distilled water were simple to 2- to 3-compound, the individual grains being spheroidal to ovate, ovate-truncate, plano-convex and mostly up to 10μ, occasionally up to 18μ, in diameter or length.

No bast fibres were observed.

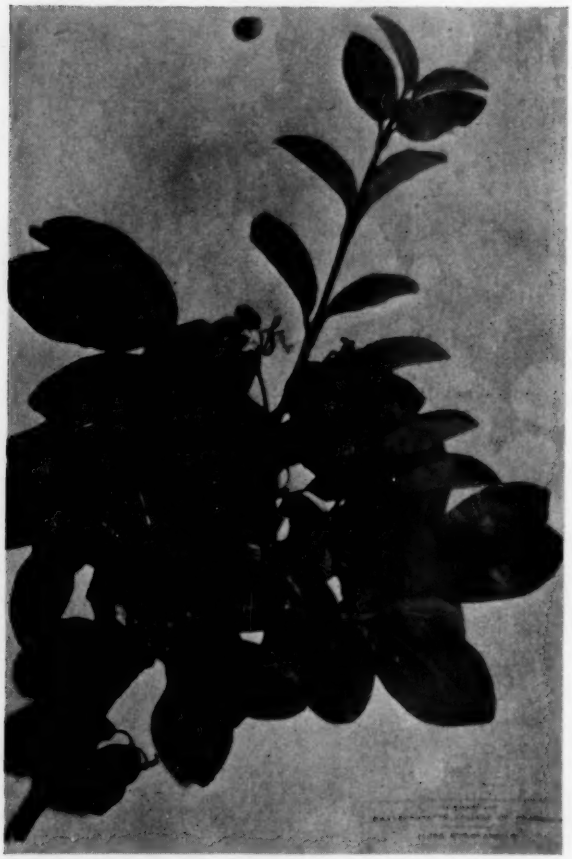


Fig. 6.—*Viburnum rufidulum* Raf. Leaf and fruiting branch. Collected in Arnold Arboretum, Jamaica Plain, Mass. Note fruit cluster at *f*.

Tannin giving a greenish color with 1:1000 solution of ferrous sulphate occurred in cells of the cortex, phloem and medullary rays.

HISTOLOGY OF THE STEM BARK OF VIBURNUM PRUNIFOLIUM L.

The cork varies in thickness and is composed of somewhat lignified cork cells which are tangentially elongated in cross sections and polygonal in surface view. Many contain brownish contents. The individual cork cells measured were frequently up to 129.6μ x 36μ, rarely up to 145.6μ x 41.6μ.

The cork cambium consists of tangentially-elongated meristematic cells.

The cortex and pericycle are of variable thickness and in old bark show wavy borke areas due to the origin of secondary cork cambia in these regions. Some of the corky areas show included masses of stone cells. The phloem is of variable width and exhibits numerous, nearly straight to slightly curved medullary rays, 1 to 2 cells wide, traversing phloem parenchyma and sieve tubes. Irregularly rounded and tangentially-elongated groups of stone cells as well as a few isolated stone cells are scattered through this region. A few pericyclic fibres with irregular lumen and rounded or obtuse ends are present in young stem bark but are not seen in older bark. This verifies Mitlacher's observation (29).

The stone-cell groups were up to 2784μ x 340μ, as observed in radial longitudinal sections.

The parenchyma cells of the cortex and phloem and the medullary ray cells contained either starch, calcium oxalate in rosette aggregates or monoclinic prisms, brownish amorphous masses or tannin.

Numerous crystal fibres containing rosette crystals of calcium oxalate occur in the phloem. The rosette crystals were up to 57.6μ in diameter. As in the root bark, the monoclinic prisms of calcium oxalate were fewer. These were up to 40μ in length.

The starch grains are simple, spheroidal and 2- to 3-compound, the individual grains being up to 10μ.

Tannin giving a greenish color with 1:1000 solution of ferrous sulphate occurred in cells of the cortex, phloem and medullary rays. Some of the cortex and phloem cells also contained droplets of a fixed oil. This may be observed separating from the brownish amorphous masses in chloral mounts.

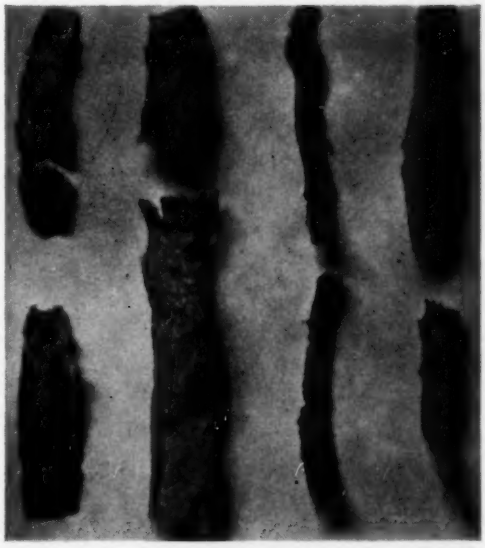


Fig. 7.—*Viburnum rufidulum.* Root bark.

VIBURNUM RUFIDULUM RAF.

The material for investigation consisted of root, stems, leaves and fruits gathered by H. W. Youngken in the Arnold Arboretum, Boston, Sept. 10, 1928, of roots, stems, root bark and stem bark gathered Dec. 1 to 3, 1928, root bark and stem bark young plants and roots gathered March 1, 1929 and root bark and stem bark and leaves gathered April 25th to May 1st by E. J. Petry at Conway, Arkansas, where the plants grew in stony ground about 500 ft. above sea level, also of root and stem bark collected by W. W. Eggleston from plants growing on the bank of a ravine at Houston, Texas, May 8, 1929, and of plants, root and stem bark gathered in Clinton Co., Ky., by the S. B. Penick Co. All of these materials were verified by H. W. Youngken as authentic after a careful comparison with specimens in the Arnold Arboretum.

DESCRIPTION OF VIBURNUM RUFIDULUM RAF.

Viburnum rufidulum Raf. or Southern Black Haw is a large shrub or small tree attaining a height of about 30 ft. with stout, rigid branches with obtuse, rusty hairy winter buds and elliptic to obovate, usually obtuse and serrulate leaves 2 to 4 in. long, which are glabrous, shining and dark green on the upper surface, rusty pubescent on the veins beneath, especially toward the base, and with usually narrowly winged, rusty pubescent petioles, up to $^1/_2$ in. in length. The flowers are white and arranged in sessile cymes. The fruits are dark blue, ellipsoidal, glaucous drupes with a flat stone. Rehder (4) and Bailey (40) both report its distribution from Virginia to Florida, west to Illinois and Texas.

This plant is hereby identified as the source of commercial Kentucky Black Haw Bark, which has been on the drug market for some time.

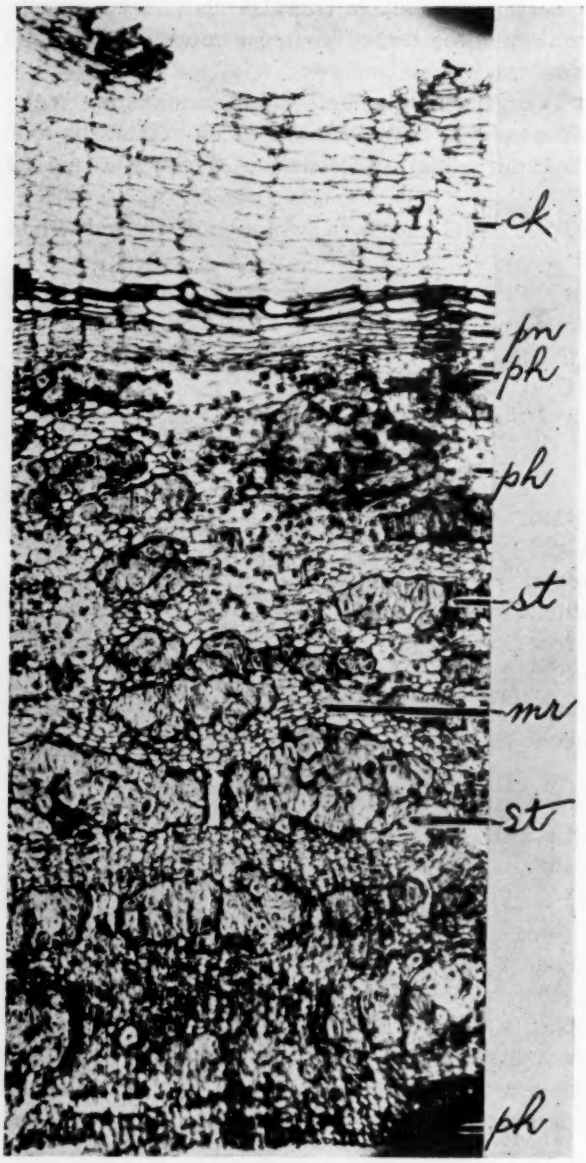


Fig. 8.—Photomicrograph of a cross section of *Viburnum rufidulum* root bark (×50), *ck*, cork; *pn*, secondary phellogen; *ph*, phloem; *st*, group of stone cells; *mr*, medullary ray; *cr*, crystal of calcium oxalate. The black objects in the parenchymatous cells are calcium oxalate crystals. Secondary phellogen is responsible for the cork tissue shown here. The original secondary and first formed cork have sluffed off.

DESCRIPTION OF VIBURNUM RUFIDULUM ROOT BARK.

In irregular or transversely curved pieces or quills from 1.5 to 10 cm. in length and from 0.5 to 3.5 mm. in thickness; outer surface varying from grayish brown, light brown, yellowish brown to brown, irregularly longitudinally striated to wrinkled and furrowed, occasionally transversely fissured, and showing cork patches on old bark, reddish brown to purplish brown to purplish where cork is abraded; inner surface pale yellowish and frequently marked with irregular blotches or streaks of reddish brown, longitudinally striated; fracture brittle and uneven exhibiting a brown cork, a reddish brown cortex and whitish to reddish brown inner bark containing yellowish groups of stone cells, odor valeric acid-like, becoming very strongly so when treated with syrupy phosphoric acid, taste bitter and astringent. Upon treating the inner surface of this bark with 1:1000 solution of freshly prepared ferrous sulphate a greenish black color is evident.

DESCRIPTION OF THE STEM BARK OF VIBURNUM RUFIDULUM RAF.

In irregular, transversely curved or quilled pieces 1.5 cm. to 15 cm. in length and up to 6 mm. in thickness. Outer surface silvery gray on young bark with raised circular lenticels, grayish brown to blackish on older bark or reddish brown where cork has scaled off. The

old bark shows thick cork with numerous irregular longitudinal, oblique and transverse fissures; inner surface pale yellowish to reddish brown or yellowish with reddish brown blotches and streaks, longitudinally striated. Fracture short and uneven, the fractured surface showing a grayish to blackish outer bark, a greenish brown to reddish brown middle bark and a light brown to whitish inner bark in which dull yellow stone-cell groups are visible under a hand lens. The odor is faintly valeric acid like, becoming only slightly more pronounced when treated

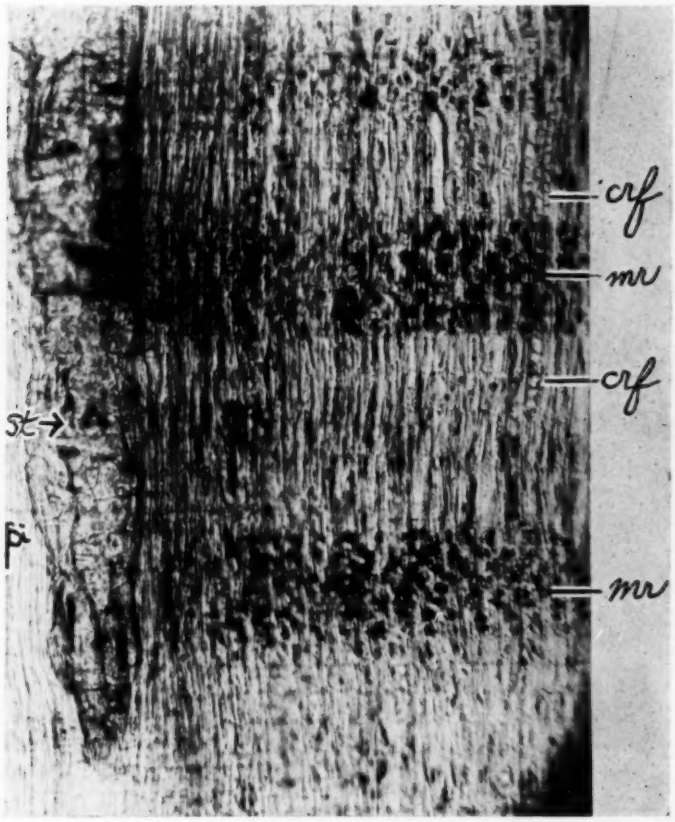


Fig. 9.—Photomicrograph of a radial-longitudinal section of the phloem region of the root bark of *Viburnum rufidulum* (×102). *si*, sieve tubes; *st*, group of stone cells; *mr*, medullary rays; *crf*, crystal fibres containing monoclinic prisms.

with syrupy phosphoric acid. The taste is astringent and bitter. The inner surface, when treated with a 1:1000 solution of ferrous sulphate, is colored greenish black.

HISTOLOGY OF VIBURNUM RUFIDULUM ROOT BARK.

The cork is up to 40 or more layers of cells in width which are tangentially elongated in cross sections. The largest of these cells are up to 154.8μ long and 72μ in radial diameter.

The phellogen is composed of a layer or more of tangentially-elongated, thin-walled, somewhat compressed cells.

The secondary cortex varies in diameter according to age. It is composed of pitted parenchyma cells which are tangentially elongated in cross section. Many of these contain rosette crystals of calcium oxalate while a number of them contain either starch, brownish red amorphous masses and tannin. Imbedded in this region are numerous groups of stone cells and scattered stone cells. The stone-cell groups are either tangentially-elongated, irregularly circular to oval in outline with irregularly indented margins as viewed in transverse sections. An outstanding feature of the majority of the groups is their deeply indented irregular outline. The larger groups showed as many as 80 stone cells in cross sections, the groups measuring up to 1020μ x 510μ in these sections. The individual stone cells are of a large variety of shapes and show varying degrees of lignification and pore canal branching. In radial-longitudinal sections and in preparations made by Schulze's method, they were up to 680μ in length.

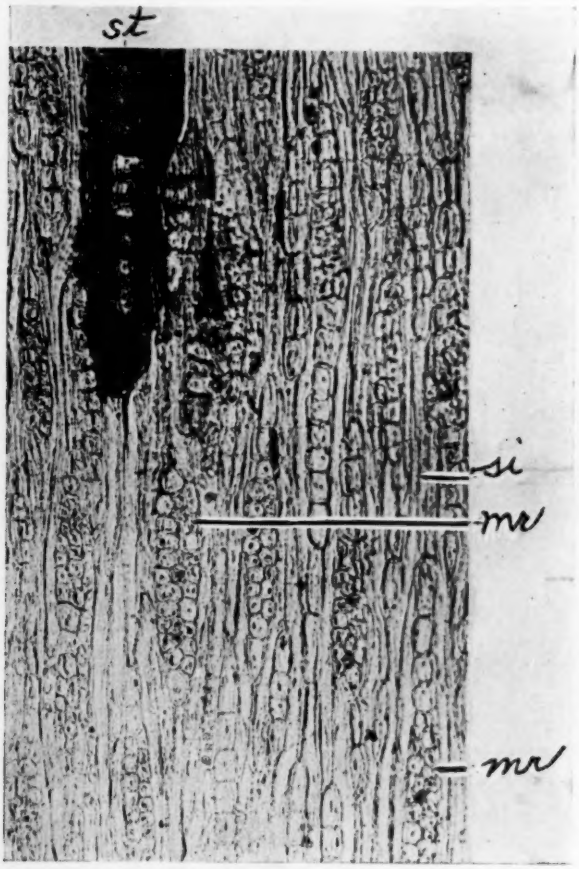


Fig. 10.—Photomicrograph of a tangential longitudinal section of the phloem region of the root bark of *Viburnum rufidulum* (×102). *si*, sieve tissue; *mr*, medullary rays; *st*, group of stone cells with a portion of an adherent crystal fibre containing monoclinic prisms of calcium oxalate.

The phloem varies in breadth but is averagely broader than the cortex. It is composed of phloem parenchyma containing either rosette aggregates or monoclinic prisms of calcium oxalate, starch grains, tannin or brown amorphous masses. Through the outer and middle portions of the phloem numerous stone-cell groups and isolated stone cells are present which resemble those of the cortex. Coursing outward through the phloem in straight or curved fashion are many medullary rays which tend to converge in groups. Some of these are interrupted by the stone-cell groups while others bend around them. The medullary rays as observed in tangential sections are from 1 to 3 cells in width, the majority being 1 cell wide,

fewer 1 to 2 cells wide; fewest 1 to 3 cells wide. The cell contents resemble those of the parenchyma and of the cortex and phloem.

Crystal fibres containing rosette aggregates of calcium oxalate were abundant in cortex and phloem. The rosette aggregate crystals were up to 54μ in diameter while the monoclinic prisms studied ranged up to 32.4μ in length.

The starch grains were simple spheroidal to oval, the latter often with a beaked end, or 2- to 3-compound. Most of the individual grains were up to 4 or 5μ, a few up to 8μ, fewer up to 15μ.

HISTOLOGY OF VIBURNUM RUFIDULUM STEM BARK.

The cork zone is of variable width and composed of more or less isodiametric

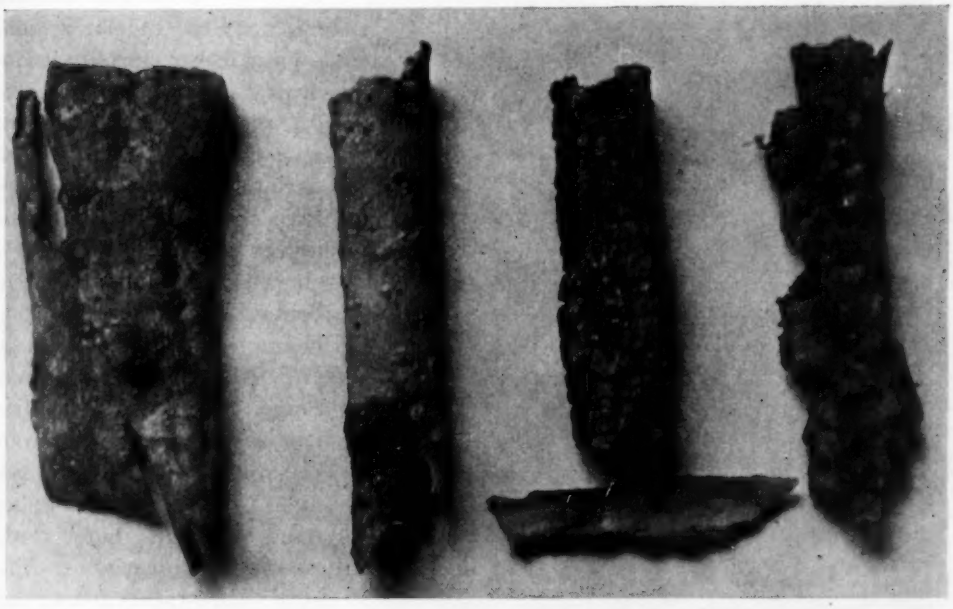


Fig. 11.—*Viburnum rufidulum.* Stem bark.

to tangentially-elongated cells in cross sections, polygonal to rounded polygonal in surface sections with suberized and lignified walls. The older cork cells are compressed and for the greater part tangentially elongated, with brownish contents. There is a tendency of the outer and inner walls to be thicker than the radial walls, but this is by no means constant. Frequently islets of stone cells are imbedded within the old cork or between it and the young cork. The young cork appears clear and open looking and is composed of radially and tangentially elongated cells with walls often wavy. The cork cells measured were up to 72μ long and 50.4μ wide.

The phellogen is composed of tangentially-elongated meristematic cells. The cortex and pericycle contain tangentially-elongated parenchyma with starch, tanning, fixed oil and brownish amorphous contents. Scattered through these

regions are many stone-cell groups and isolated stone cells. As the stem grows older, secondary cork cambia originate in the depths of the cortex and pericycle and outer phloem forming wavy borke layers in these zones containing groups of stone cells. In old stem bark sluffing of the outer layers occurs as far as the last secondary cork cambium and cork is formed in the outer phloem, so that in real old bark the medullary rays reach outward to the secondary cork cambium.

Fig. 12.—Photomicrograph of a cross section of *Viburnum rufidulum* stem bark (×55). Secondary cork cambia have cut off deep layers of cork as far as the phloem. *ck*, cork; *p*, a secondary cork cambium; *st*, group of stone cells; *ph*, phloem; *mr*, medullary ray.

While most of the medullary rays are 1 to 2 cells in width, there are quite a few 1 to 3 cells wide.

The phloem is a relatively broad zone consisting of sieve tubes and phloem parenchyma, the latter containing either starch, tannin, brownish amorphous masses or rosette aggregates, or monoclinic prisms of calcium oxalate. The medullary rays course through this region in straight to slightly curved or wavy fashion and contain elements similar in character to those found in the phloem parenchyma. Some of them are intercepted by groups of stone cells, which, along with isolated stone cells are abundant in the outer and middle phloem regions. The stone-cell groups appear close together in phloem, cortex and old cork. They are averagely smaller than in the root bark of this species. In radial longitudinal sections, one stone-cell group measured 850μ x 510μ. Many of the individual stone cells observed in preparations made by Schulze's method are sinuate-toothed along the margin. They show a large variety of shapes and sizes.

The margins of the stone-cell groups were irregularly rounded, oval or oblong, crenate to toothed and indented. Numerous crystal fibres containing rosette aggregates and a number containing monoclinic prims, as well as rosette aggregates and monoclinic prisms of calcium oxalate occurred in cortex, pericycle and phloem.

The rosette aggregates were up to 54μ in diameter while the monoclinic prisms were up to 25μ in length.

The starch grains are mostly simple, spheroidal and up to 4μ. A few are ovoid and beaked and up to 8μ, while 2- to 3-compound starch grains are occasional.

Numerous droplets of a fixed oil separated when sections of the bark were warmed in chloral hydrate solution.

The tannin cells took on a greenish coloration when sections were examined in 1:1000 solution of ferrous sulphate.

VIBURNUM CASSINOIDES.

The material for this investigation consisted of roots, stems, abundant root bark and stem bark and leaf and flowering branches collected near Pineola, N. C., in swampy woodlands, June 8 to 11, 1929, by H. W. Youngken.

DESCRIPTION OF VIBURNUM CASSINOIDES L.

Viburnum cassinoides L. (*V. nudum* var. *cassinoides* T. & G.) commonly known as Witherod and Appalachian Tea, is an upright shrub from 2 to 12 ft. in height occurring in swamps and wet thickets from Newfoundland to Manitoba and Minnesota, south into North Carolina. Its leaves are elliptic, ovate, oblong or ovate-lanceolate, from 1 to 3 in. in length, when mature, subcoriaceous, dull green above and nearly glabrous, paler green beneath, acute or bluntly acuminate at the apex and dentate to denticulate or obscurely so along the margin. Its inflorescences are compound cymes of white perfect flowers with peduncle usually shorter than the cyme. The fruits are bluish, ovoid drupes containing a flattened stone.

Fig. 13.—*Viburnum cassinoides* Linné. Leaf and flowering branch from shrub growing in swampy woodland near Pineola, N. C., June 1929.

DESCRIPTION OF THE ROOT BARK OF VIBURNUM CASSINOIDES L.

In irregular, transversely curved or quilled pieces, 1.5 cm. to 16 cm. in length and 0.5 mm. to 2 mm. in thickness, rarely up to 2.5 mm. in thickness where cork

is thick; outer surface grayish brown to dark brown or blackish brown, or, where the cork has been scraped off, brownish red, irregularly longitudinally striated and wrinkled on younger bark, becoming irregularly longitudinally wrinkled and somewhat irregularly fissured on old bark; inner surface varying from yellowish and streaked with lines and blotches of brown and red, yellowish brown to pinkish brown to reddish brown, longitudinally striated; fracture short and uneven, the fractured surface exhibiting a grayish to brownish, blackish or reddish brown cork. a whitish, brownish red or pale yellowish middle and inner bark in which dull yellowish oval or circular groups of stone cells may be seen with a hand lens: odor strong, valeric acid-like: taste bitter and astringent. The inner surface of this bark, when treated with a freshly prepared 1:1000 solution of ferrous sulphate, becomes greenish black.

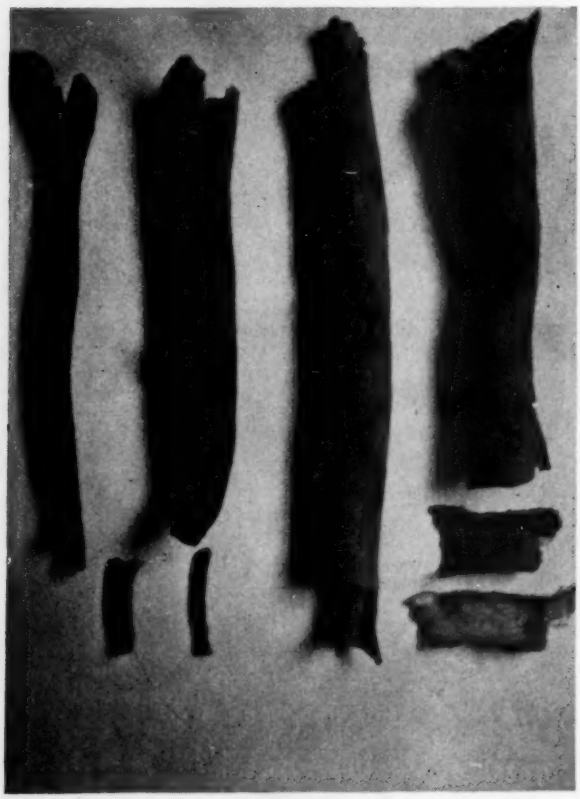


Fig. 14.—*Viburnum cassinoides.* Root bark.

DESCRIPTION OF THE STEM BARK OF VIBURNUM CASSINOIDES L.

In irregular, transversely curved or quilled pieces from 1.5 cm. to 17 cm. in length and 0.5 mm. to 2 mm. in thickness and possessing a purplish brown aspect when examined in quantity. Outer surface smooth and polished with scattered, raised circular to oval lenticels on young bark to irregularly longitudinally wrinkled and irregularly fissured on older bark, the latter sometimes showing greenish or grayish lichens, or outer surface purplish red where cork is abraded. Inner surface pale yellow to yellow streaked with brownish red or orange brown or inner surface brownish red, longitudinally striate. Fracture short and uneven exhibiting a grayish to brown or black cork, a greenish phelloderm on young bark, and a yellowish white to pinkish white or reddish brown middle and inner bark in which scattered dull yellowish, oval to circular groups of stone cells may be seen with a hand lens. Taste distinctly bitter and somewhat astringent. Odor aromatic, valeric acid-like, becoming strongly valeric acid-like upon triturating bark with syrupy phosphoric acid.

The cork is composed of a variable number of layers of suberized cells which are tangentially elongated in cross sections.

The phellogen is composed of tangentially-elongated meristematic cells.

The secondary cortex is composed of several layers of tangentially-elongated cells with occasional rifts between the parenchyma. Imbedded in this region are groups of stone cells and some isolated stone cells.

The phloem is relatively the broadest region and consists of a matrix of sieve tubes and phloem parenchyma traversed by medullary rays, the latter being 1, 1 to 2 and 1 to 3 cells wide as observed in tangential section. Scattered through this matrix are a number of irregularly circular, ovate or oblong groups of stone cells, similar in character to those noted in the secondary cortex with somewhat scalloped and crenated to toothed margins.

The individual stone cells examined varied in size and shape, had lignified walls, branching pore canals and circular, oval or slit-like lumina. The walls of the largest of these were up to 90μ in thickness.

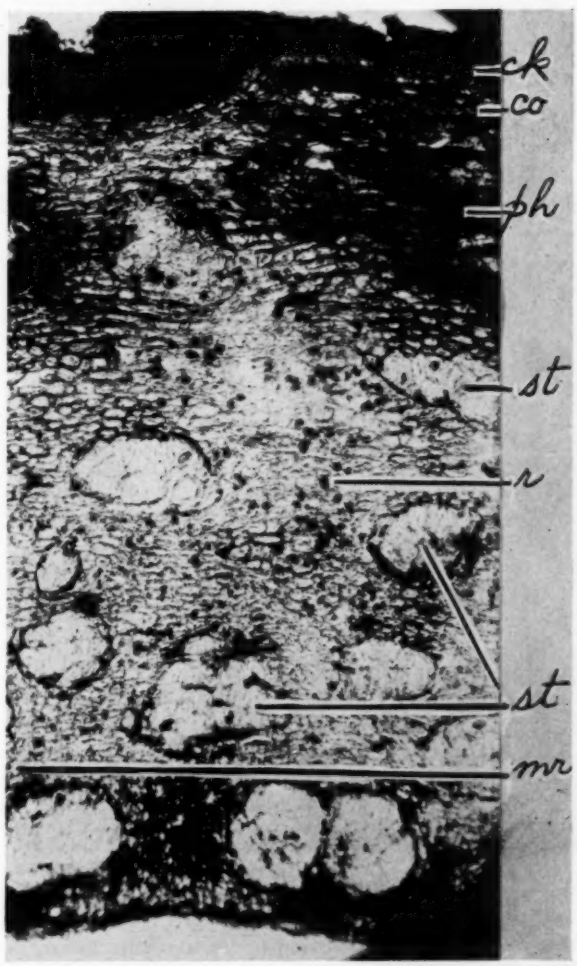


Fig. 15.—Photomicrograph of a transverse section of the root bark of *Viburnum cassinoides* (×52). *ck*, cork; *co*, secondary cortex; *ph*, phloem; *st*, stone cell groups; *r*, rosette aggregate of calcium oxalate; *st*, groups of stone cells; *mr*, medullary ray.

The parenchyma of the cortex and phloem and medullary ray cells contained either starch grains, brownish amorphous masses, tannin or rosette crystals of calcium oxalate. Droplets of a fixed oil separated from cells of these regions when mounts were examined in chloral solution. The starch grains are mostly simple spheroidal, ovate to top shaped, some beaked and up to 14.4μ. A few 2- to 3-compound starch grains also occur as well as their plano-convex or angular-rounded parts.

The rosette crystals of calcium oxalate are mostly under 40μ, a few up to 54μ. Numerous crystal fibres containing rosette aggregates of calcium oxalate occur in the phloem and cortex. The cells containing tannin took on a greenish coloration when mounts were examined in 1:1000 of a freshly prepared solution of ferrous sulphate.

HISTOLOGY OF THE STEM BARK OF VIBURNUM CASSINOIDES L.

The cork is of variable thickness and consists of cells which are tangentially elongated and suberized to somewhat lignified.

The phellogen is composed of tangentially-elongated meristematic cells.

The secondary cortex is composed of tangentially-elongated parenchyma some of the cells of which contain chloroplastids and small starch grains. A few scattered groups of stone cells occur in this region.

Fig. 16.—*Viburnum cassinoides.* Stem bark.

The primary cortex is composed of pitted parenchyma containing either rosette crystals of calcium oxalate, starch grains, tannin or brownish amorphous masses. Scattered through this region are irregularly circular to oval or oblong groups of stone cells with crenated margins and a few isolated stone cells.

The phloem is a relatively broad zone of sieve and phloem parenchyma which is traversed by medullary rays which in cross sections, are seen to run a straight to somewhat wavy or slightly curved course and tend to converge in groups. Numerous stone-cell groups and some isolated stone cells are scattered through the phloem. The stone-cell groups were up to 2856μ x 214.2μ. The individual stone cells are of a variety of shapes and sizes and show thick, lignified walls, up to 36μ in thickness, branching pore canals and circular to irregular lumina.

Many of the parenchyma cells of the cortex, pericycle and phloem contain rosette aggregates of calcium oxalate which were up to 36μ in diameter. Others contain starch, tannin and some brownish amorphous contents. Mounts made in chloral hydrate showed a separation of fixed oil droplets. The tannin gave a greenish color with 1:1000 solution of ferrous sulphate.

Tangential-longitudinal sections exhibited numerous crystal fibres in phloem, cortex and pericycle containing rosette aggregates of calcium oxalate. In these

sections the medullary rays were mostly 1 to 2 cells wide, a few 1 to 3 cells in width. They contained elements similar to those noted in the parenchyma cells of the bark.

The starch grains are mostly simple, spheroidal and up to 10.8μ.

VIBURNUM NUDUM.

The material for this investigation consisted of root bark, stem bark, roots, stems and leaf and flowering branches collected at Mud Creek Flats between Flat Rock and Hendersonville, N. C., by H. W. Youngken and of stem bark and leaf and flowering branches collected at Biltmore, N. C., by H. W. Youngken on June 12, 1929.

DESCRIPTION OF VIBURNUM NUDUM L.

Viburnum nudum L., commonly known as Smooth Witherod, Shawnee Haw and Shonny Haw is an upright shrub growing to the height of 15 ft. Its leaves are ovate to elliptic, ovate-lanceolate to elliptic-lanceolate, acute or obtuse usually entire and somewhat revolute but also frequently obscurely crenulate to denticulate and undulate, petiolate, broadly cuenate at base, from 2 to 4 3/4 in. in length, scurfy on both sides when young, dark green and shining on the upper surface at length. The flowers are white or yellowish white and arranged in compound cymes, the peduncle of which is as long or frequently longer than the cyme. The fruits are subglobose drupes, pink at first, changing to bluish black.

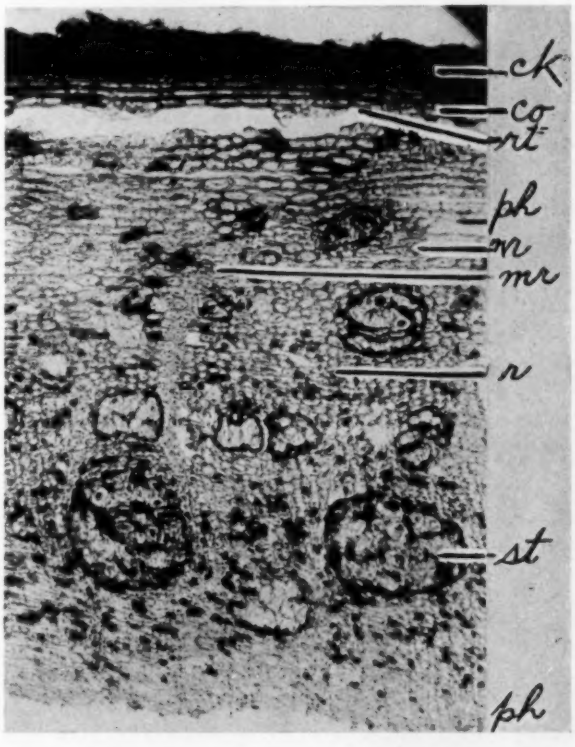


Fig. 17.—Photomicrograph of a transverse section of *Viburnum cassinoides* stem bark (×58). *ck*, cork; *co*, cortex; *rt*, rift between parenchyma cells of cortex; *ph*, phloem; *mr*, medullary ray; *st*, group of stone cells; *r*, rosette aggregate of calcium oxalate.

According to Bailey (40), this shrub is found from Long Island to Florida, west to Kentucky and Louisiana.

A number of shrubs intermediate between typical *V. nudum* and *V. cassinoides* in leaf and peduncle characters were observed near Pineola and near Statesville, N. C.

DESCRIPTION OF VIBURNUM NUDUM ROOT BARK.

In irregular, transversely curved or quilled pieces, 1.5 to 7 cm. in length and from 0.5 to 2 mm. in thickness: outer surface grayish brown or, where cork has

scaled off, brownish red, irregularly longitudinally wrinkled; inner surface brownish red, frequently with pale yellow blotches and streaks, longitudinally striated; fracture short and uneven, showing in bark which is young or of medium thickness a grayish to dark brown cork, a brownish red middle bark and a whitish inner bark with numerous scattered oval to rounded, dull yellow groups of stone cells: odor strong, valeric acid-like; taste distinctly bitter and somewhat astringent.

Fig. 18.—*Viburnum nudum* Linné. Leaf and flowering branch. Collected in low swamp at Mud Creek Flats near Flat Rock, N. C., June 1929.

DESCRIPTION OF VIBURNUM NUDUM STEM BARK.

In strips, transversely curved pieces or quills from 1.5 cm. to 16 cm. in length and from 0.5 to 2 mm. occasionally 3 mm. in thickness: outer surface varying from dark brown to blackish brown, showing purplish blotches in some pieces, irregularly longitudinally wrinkled and showing numerous circular to oval lenticels, smooth in young bark becoming longitudinally wrinkled, irregularly wrinkled and at length fissured in old bark: inner surface pale yellowish, streaked and blotched in some pieces with orange brown and red; fracture short but uneven, showing in bark which is young or of medium thickness a brown cork, a greenish yellow to brown middle bark, and a pale yellowish to reddish brown inner bark, the latter showing oval to rounded groups of dull yellow stone cells under the hand lens: odor aromatic, valeric acid-like, becoming pronounced valeric acid-like upon trituration with phosphoric acid; taste distinctly bitter and somewhat astringent.

This bark tends to be darker than the stem bark of *V. cassinoides*. The purple areas noted are less extensive than on the outer surface of the stem bark of *V. cassinoides*.

A greenish black color is developed when the inner surface of this bark is treated with 1:1000 solution of ferrous sulphate.

HISTOLOGY OF THE ROOT BARK OF VIBURNUM NUDUM L.

The cork is of variable width and composed of tangentially-elongated cells with suberized to slightly lignified walls, as observed in cross sections.

The phellogen is made up of tangentially-elongated meristematic cells. The secondary cortex is narrow and shows tangentially-elongated to rounded parenchyma cells with pitted walls and starch, tannin, calcium oxalate or brownish amorphous contents. In young root bark a continuous zone of stone cells is laid down in the inner part of this region, just outside of the phloem. This becomes broken up into smaller masses as growth proceeds.

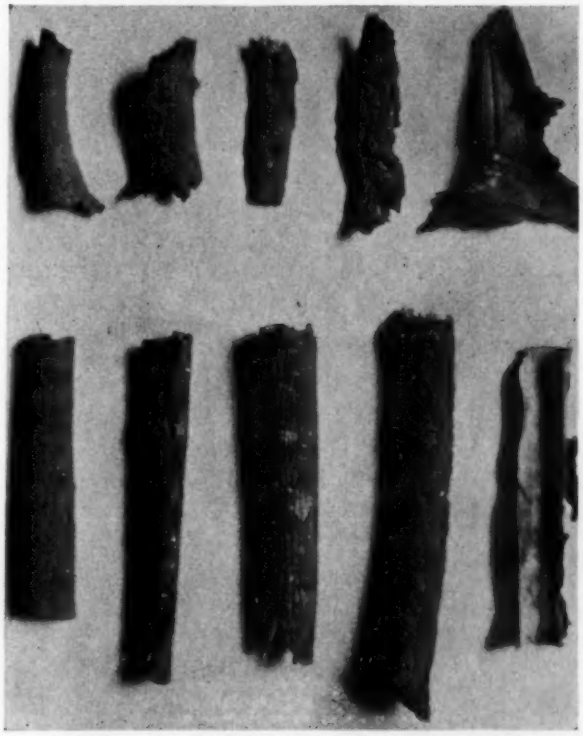


Fig. 19.—*Viburnum nudum.* Root bark above. Stem bark below.

The phloem is a comparatively broad region composed of phloem parenchyma containing starch, tannin, calcium oxalate crystals and brown amorphous masses and separated into numerous phloem patches by medullary rays 1 to 2 cells wide which run either straight or curved and tend to converge in groups. Numerous stone-cell groups of irregularly rounded, ovate or oblong shape and with crenated margins as well as a number of isolated stone cells occur in this region. The individual stone cells are of a large number of shapes and sizes, are lignified with branching pore canals and have circular to oval to triangular or slit like lumina. Many of them contain reddish coloring matter. Their walls were up to 44μ in thickness.

Numerous rosette crystals and crystal fibres containing this form of calcium oxalate occurred in the phloem and cortex. The rosette crystals were up to 43μ in diameter.

The starch grains were simple, spheroidal and 2- to 3-compound, the individual grains up to 12μ. The simple grains are frequently beaked.

The tannin gave a greenish coloration with 1:1000 freshly prepared solution of ferrous sulphate.

HISTOLOGY OF THE STEM BARK OF VIBURNUM NUDUM L.

The cork is composed of tangentially-elongated, suberized cells which are

polygonal to rounded polygonal in surface sections. In the older bark stone-cell groups are imbedded in this region. The dimensions of the cork cells were up to 136μ x 102μ.

The phellogen consists of tangentially-elongated meristematic cells.

The cortex is comparatively narrow and shows rifts. Its outer portion is collenchymatic and in young bark contains chloroplasts, its inner portion parenchymatous with pitted parenchyma cells containing brownish amorphous masses, rosette crystals of calcium oxalate, starch and tannin. Stone-cell groups averagely smaller than in root bark and isolated stone cells occur in this region. Rifts occur between parenchyma cells in cortex and phloem.

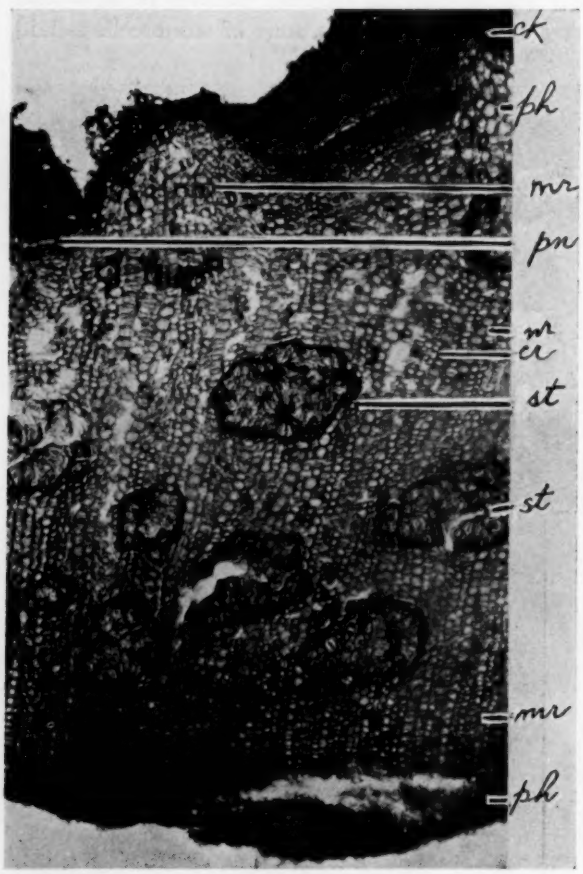


Fig. 20.—Photomicrograph of a cross section of *Viburnum nudum* root bark (about ×40). Secondary phellogens have cut off cork causing exfoliation of secondary cortex and original outer bark as far as the phloem. *ck*, cork; *pn*, secondary meristem; *ph*, phloem, *mr*, medullary rays; *st*, groups of stone cells; *cr*, rosette aggregate of calcium oxalate.

The pericycle contained elements similar to the cortex.

The phloem is relatively broad and composed of phloem parenchyma and sieve tubes traversed by medullary rays 1 to 2 cells in width which run straight or slightly curved and tend to converge in groups, as observed in cross sections. Imbedded in this region are a large number of circular, oval, oblong or ellipsoidal groups of stone cells and a number of isolated stone cells with lignified walls, branching pore canals and irregularly circular to ovate to slit-like lumina. The wall of the stone cells was up to 46.6μ thick.

The stone-cell groups measured up to 2856μ x 357μ in radial-longitudinal sections.

Crystal fibres containing rosette aggregates occurred in cortex, phloem and pericycle. The phloem parenchyma and medullary rays contained either starch, tannin, brown amorphous masses, or granular contents or rosette aggregates of calcium oxalate up to 54μ in diameter.

Some of the stone cells exhibited a wavy-toothed margin in mounts made of material which had been prepared by Schulze's method. They measured up to 180μ x 72μ.

The tannin took on a greenish coloration when treated with 1:1000 freshly prepared solution of ferrous sulphate.

Scrapings of the bark mounted in distilled water showed the starch grains to be chiefly simple, spheroidal and up to 15μ. A number of 2- to 3-compound starch grains also occur. Many of the simple grains were beaked and showed a central cleft hilum.

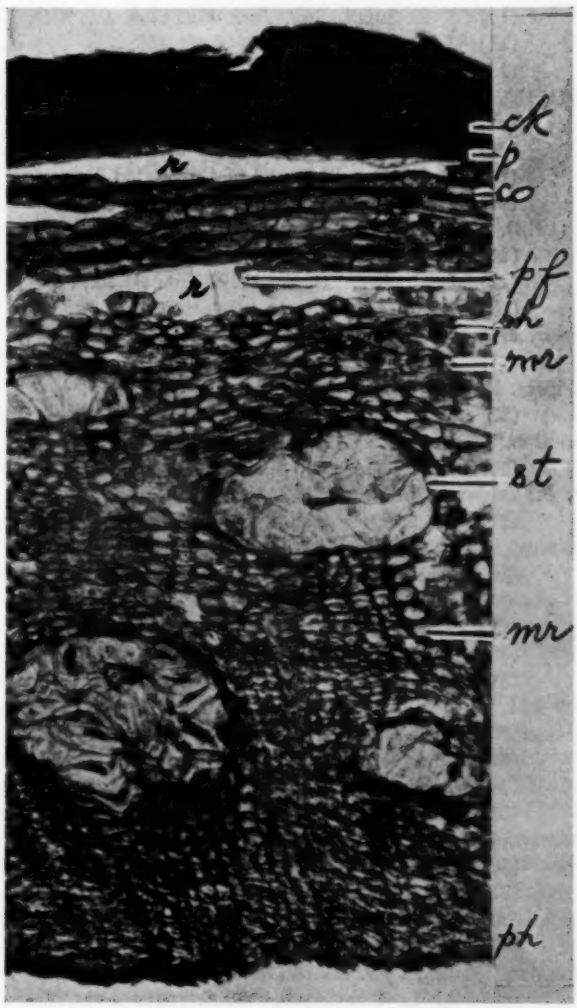


Fig. 21.—Photomicrograph of a cross section of *Viburnum nudum* stem bark (×110). *ck*, cork; *p*, phellogen; *co*, cortex; *pf*, pericyclic fibers in pericycle; *r*, rifts, occurring between groups of parenchyma cells in cortex and pericycle; *ph*, phloem; *st*, group of stone cells; *mr*, medullary rays which are often interrupted in this and some other *Viburnum* barks by interposed groups of stone cells. The black objects in the parenchyma cells are calcium oxalate crystals.

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Reports on other parts of this investigation are to be published as they are completed by the collaborators, who are James C. Munch and Florin J. Amrhein, with the author of this paper.

MASSACHUSETTS COLLEGE OF
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The Canadian Pharmaceutical Journal, of which our esteemed fellow-member, Dr. R. J. B. Stanbury is the editor, gave an interesting account of the Baltimore meeting of the AMERICAN PHARMACEUTICAL ASSOCIATION, devoting quite a large part of the issue to the proceedings. Both Editor Stanbury and President MacFarlane attended. An address by the latter will be found in the May issue of the JOURNAL in the minutes of the General Sessions. (See page 571, May issue of the JOURNAL.)

THE PHARMACOLOGY OF ERGOT: WITH SPECIAL REFERENCE TO BIOLOGICAL ASSAY AND STANDARDIZATION.

PART IX. SUMMARY WITH CONCLUSIONS AND RECOMMENDATIONS.

BY MARVIN R. THOMPSON.*

The experimental results obtained in this investigation, together with a thorough review of the literature, have given rise to the following conclusions and recommendations regarding crude ergot, its constituents and its preparations:

CRUDE ERGOT.

I. VARIETIES AND COMMERCIAL SOURCE.

Practically all of the ergot of rye on the market is produced in Europe. Spain, Portugal, Russia and Poland furnish the greater part of the supply, although smaller amounts are obtained from more centrally located European countries. Ergot occurs in small quantities in rye fields of various localities of this country. It occurs casually in many sections of the cereal grain belt. The author is not aware of any attempts to utilize for medicinal purposes the amounts grown in the United States. Its growth has also been observed upon other members of the Graminiae, especially Quack or Couch Grass (*Agropyron repens*), and several varieties of wheat. The structure, size and appearance of ergot sclerotia obtained from grasses other than rye are characteristic for each variety, and differ markedly in size and shape from those of ergot of rye, although suitable extracts of wheat and couch grass ergot have been observed to contain significant potency when tested by the Cock's Comb Method.

Ergot of rye is the only variety used in medicine at the present time. In examining over two hundred samples it was observed that shipments obtained from Spain and Portugal usually contained a higher proportion of specific alkaloid than those obtained from Russia and Poland, although the majority of the samples of Russian and Polish ergot contained a significant amount of alkaloid, which equalled or exceeded the requirements of the U. S. P. No distinguishing pharmacological, toxicological or chemical characteristics other than differences in the average amounts of the specific alkaloid have been observed. The non-specific amines occur in variable quantities in the majority of lots of all varieties. Since the alkaloidal potency of Fluidextract of Ergot or other preparations must be standardized, Russian and Polish ergot of U. S. P. quality yield preparations which are equal in quality to those prepared from Spanish or Portuguese ergot. The Spanish and Portuguese varieties are to be preferred purely from the standpoint of alkaloidal content, in that a larger volume of U. S. P. Fluidextract is obtainable from a given weight of the ergot than when Russian or Polish ergot are used.

II. CONSTITUENTS.

The extractable constituents of ergot may be classified as follows:

(*1*) *Specific Alkaloids.*—Every sample of ergot so far examined has contained alkaloidal activity, thereby establishing the specificity of this activity for the drug. The value of ergot in medicine is due entirely to this specific alkaloidal activity. Depending largely upon the method employed, the following alkaloids can be isolated:

(*a*) Ergotoxine $C_{35}H_{41}O_6N_5$ (Barger and Carr (3)), identical to Amorphous Ergotinine (Tanret (2)), and Hydroergotinine (Kraft (4)) is an amorphous alkaloid and one of the most active of those yielded by ergot.

Crystalline salts can be prepared from this alkaloid.

(*b*) Ergotamine $C_{33}H_{35}O_5N_5$, a crystalline alkaloid first isolated by Stoll (60), equal in activity to ergotoxine. Ergotoxine and ergotamine are pharmaco-dy-

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namically identical. Ergotamine is obtained in combination with solvent of crystallization and yields crystalline salts.

(*c*) Crystalline Ergotinine $C_{35}H_{39}O_6N_5$, first isolated by Tanret (2), is practically inactive.

(*d*) Ergotaminine, an isomer of ergotamine, also isolated by Stoll, has been shown to be practically inactive by Rothlin (61).

Ergotoxine, ergotamine and crystalline ergotinine have been isolated and studied during this investigation. It will be noted that the empirical formula of ergotamine differs from the equally active ergotoxine by C_2H_5OH, and that ergotoxine (active) differs from crystalline ergotinine (inactive) by one molecule of H_2O. Crystalline ergotinine is a dehydration product of ergotoxine, and the one can be readily converted to the other by chemical means. The crystalline alkaloids are invariably obtained in combination with solvents of crystallization.

Solutions of the active alkaloids of ergot are prone to rapid oxidation in the presence of air, which results in a loss of activity. Freshly prepared solutions are colorless. As the oxidation and loss in potency progresses, the solutions take on a yellowish tint which gradually changes to brown.

Ergotamine and ergotoxine are stable in the dry condition if protected from the air. Exposure to the air causes decomposition and loss in activity. If sealed in ampuls in a dry condition, their activity remains constant for many years. Both are entirely representative of the alkaloidal activity of ergot.

Although the solubilities of these alkaloids differ, both are soluble in many of the organic solvents such as ether, alcohol, acetone, etc., but are practically insoluble in water. They exhibit amphoteric reactions. Their solution in water may be affected by trituration with dilute solutions of organic acids (tartaric, citric, etc.) or by the addition of traces of mineral acids such as hydrochloric. A slight excess of hydrochloric acid causes precipitation, while a greater excess redissolves the precipitated alkaloid. Traces of some of the alkalies (hydroxides, carbonates, etc.) cause precipitation from aqueous solution, while an excess redissolves them. Many other electrolytes also cause precipitation.

The alkaloids mentioned above which exhibit any activity at all exert this activity synergistically. The alkaloidal activity of the numerous samples examined has been found to vary from 0.02 to 0.3 per cent (in terms of ergotamine or ergotoxine) as determined by biological methods. The majority of the samples examined contained between 0.05 and 0.150 per cent.

(*2*) *Non-specific Amines.*—Such proteinogenous amines as histamine, tyramine, acetylcholine, agmatine, guanido-butylamine, iso-amylamine, etc., have been identified with ergot by earlier investigators. No statement is available as to the proportions in which they exist in crude ergot. This investigation has furnished evidence showing that histamine is the only one of these substances which exists in ergot in sufficient amounts to cause significant pharmaco-dynamic activity. None of these amines contributes to the desirable clinical activity of ergot, and, therefore, they should be excluded from both oral and hypodermic ergot preparations, especially those intended for hypodermic use.

Histamine, or other amino bases, was not found to be present in all samples of ergot examined although the majority contained quantities varying from traces up to 0.15 per cent in terms of histamine (as determined by biological methods). More than 0.1 per cent was very unusual.

The non-specific amines are formed by enzyme action upon the otherwise inert proteinogenous constituents of the drug. It has been reported that such non-specific amines are not present in the freshly collected drug, thereby indicating that the amine formation takes place during storage rather than during the natural growth and development of the fungus upon the rye plant, although some old samples actually showing evidence of decomposition have proven to be devoid of active non-specific amines upon examination. That the non-specific amine activity of crude ergot may increase if stored in a damp condition, has been conclusively demonstrated in these studies. They are protein decomposition products and are not derived from the ergot alkaloids. There is no relationship between the amounts of non-specific amines and the alkaloids present in crude ergot. Such amine formation takes place in many plant and animal products under certain conditions due to the action of bacteria or proteolytic enzymes.

(*3*) *Pharmaco-dynamically Inert Extractives.*—These consist of one or more pigments or

coloring principles, 10 to 35 per cent of fixed oil, small amounts of inorganic salts, and appreciable quantities of complex proteinogenous substances. None of these substances lends to the desirable action of ergot preparations and should be excluded as much as possible.

III. THE CHEMICAL SEPARATION OF THE NON-SPECIFIC AMINE FRACTION FROM THE SPECIFIC ALKALOIDAL FRACTION OF CRUDE ERGOT AND FLUIDEXTRACT OF ERGOT.

Because of the complexities encountered in pharmacological studies of mixtures of the pharmaco-dynamically active constituents of ergot (as they occur in many of the popular types of ergot preparations), a chemical separation of the non-specific amine fraction from the specific alkaloidal fraction is necessary.

A method has been described for the preparation of a non-specific amine-free Fluidextract of Ergot which owes its activity exclusively to the specific alkaloids. The separation procedure can be successfully carried out as follows:

CRUDE ERGOT.

Method I.—Maceration and percolation of the powdered and de-fatted drug with an aqueous sodium bicarbonate menstruum and then percolation with water results in a percolate which contains the non-specific amine fraction of the drug. After the non-specific amines are removed (as indicated by testing upon the isolated guinea-pig uterus, or by pressor methods to cats or dogs), the specific alkaloidal fraction may be obtained by percolation of the amine-free drug with an acid-hydroalcoholic menstruum similar to that used for Fluidextract of Ergot, U. S. P.

Method 2.—Conversion of the drug to the U. S. P. X Fluidextract results in a preparation which, when freshly prepared, contains all of the non-specific amines *and* the specific alkaloids which were present in the parent drug. Separation of the two fractions of this preparation can be accomplished by the method described below for Fluidextract of Ergot.

FLUIDEXTRACT OF ERGOT, U. S. P. X.

This method of separation applies also to similar alcoholic orhydroalcoholic ergot preparations.

Method.—By completely de-alcoholizing a suitable portion of the preparation by concentration *in vacuo*, and bringing up to the original volume by the cautious addition of saturated sodium bicarbonate solution, the alkaloids are precipitated. After allowing the precipitate to settle, the clear liquid contains the non-specific amine fraction of the preparation. The amount of alkaloids which separates out serves as a rough indication of the alkaloidal activity of the preparation, although in old samples an appreciable amount of an inactive dark colored precipitate may result, thereby detracting from the significance of this test. After separating the precipitate by centrifugation, decantation or filtration, the non-specific amine activity (contained in the clear filtrate) may be studied. The specific alkaloidal precipitate may then be placed in solution for study by the cautious addition of 10 to 20 per cent of alcohol and a sufficient amount of hydrochloric acid to cause an acid reaction to the solution.

IV. THE PHARMACO-DYNAMIC BEHAVIOR OF THE ACTIVE CONSTITUENTS OF ERGOT UPON ORGANISMS AND TISSUES INVOLVED IN BIO-ASSAY METHODS.

According to pharmaco-dynamic activity and importance, the constituents of ergot may be conveniently divided into two groups; *1st*, the specific alkaloids; and *2nd*, the non-specific amines.

(*1*) *The Specific Alkaloids.*—Practically the entire alkaloidal activity of ergot is due to an alkaloid which, depending upon the method employed, can be isolated as either ergotoxine (amorphous ergotinine, hydroergotinine) or ergotamine. They are pharmacologically identical. The other alkaloids, if present at all, contribute little to the activity of ergot preparations.

(*2*) *The Non-specific Amines.*—As previously stated, the non-specific amine-activity of ergot, if present at all, is due almost entirely to histamine. The other amines, such as tyramine

and cholines, do not exist in sufficient amounts to exhibit significant activity in the doses and concentrations of ergot preparations usually employed in pharmaco-dynamic studies or in therapeutic practice.

Since many of the usual ergot preparations contain active amounts of histamine in admixture with the ergot alkaloids, the action of these active constituents in mixtures as well as individually will be summarized.

(A). COCKERELS: COCK'S COMB REACTION.

1. The Specific Ergot Alkaloids.—The alkaloidal activity of ergot is responsible for the well-known bluing or cyanotic effect of ergot preparations upon the comb of cockerels, the intensity of effect being proportional to dosage within maximum and minimum limits. The bio-assay method of the U. S. P. 10th Revision, depends upon this reaction, in which the ergot preparation is injected intramuscularly. Individual cockerels differ in their susceptibility to the ergot alkaloids, thereby making it absolutely essential that test cockerels be accurately standardized before attempts are made to utilize them in estimating the alkaloidal activity of ergot preparations. The susceptibility of cockerels to ergot alkaloids increases during continued usage. This, and natural changes, makes it necessary to re-standardize the test birds at least every three months. When properly applied, the Cock's Comb Method provides for the estimation of alkaloidal activity of ergot preparations within plus or minus 20% (in terms of U. S. P. X potency for fluidextract) unless interfering substances are present in the ergot preparation. Unless the "threshold reactions" of the test birds have been predetermined, this method is of qualitative value only. Minimum effective doses produce essentially no symptoms other than the bluing or blanching of the combs, wattels, tissue about the eyes, etc. Greater doses, in addition to the cyanotic effect, cause a drowsiness, slight salivation and an increase in the rate and depth of respiration. As the toxic dose is approached all of these symptoms are proportionately intensified. A marked general depression, salivation and comb cyanosis develops, and respiration becomes so rapid as to cause panting. Large doses (over 1.0 mg. of ergotamine, ergotoxine or 2.0 cc. of U. S. P. Fluidextract of Ergot) per Kg. may cause death by respiratory paralysis. The effect of the ergot alkaloids is very persistent. Depending upon the dose given and individual characteristics of the cocks, from one to ten days elapse before the combs return to normal. Although cockerels often return to apparent normality in several days, a shortening of the two weeks' rest period specified by the U. S. P. would not be advisable. Even when used every two weeks, morphological changes are produced. This is evidenced by loss in weight, abnormally rapid growth of the combs and an increase in susceptibility to the active constituents of ergot.

2. Histamine.—Aside from the specific alkaloids, histamine is the only constituent of ergot capable of producing a perceptible effect upon the cock's comb. Doses ranging from 0.2 to 0.6 mg. per Kg. produce a reddening of the combs, presumably due to capillary dilatation. No other symptoms become apparent and this effect passes off in less than two hours. Larger doses, ranging from 0.75 to 1.5 mg. per Kg., often produce a bluing or blanching of the combs similar to that caused by the ergot alkaloids, *especially in cockerels which have been subjected to ergot testing for an appreciable period.* The general symptoms induced by such doses of histamine differ greatly from those produced by the ergot alkaloids, the most important of which are marked depression, muscular weakness and tremors. Even in relatively large doses the effects are transitory, wearing off in several hours.

An actual manifestation of histamine symptoms is rarely encountered when testing Fluidextract of Ergot, but is frequently observed in testing aqueous pilular extracts which may contain high proportions of histamine but little or no alkaloid.

3. Mixtures of Ergot Alkaloids and Histamine.—Since the usual types of ergot preparations often contain the active principles in admixture, the effect produced by such mixtures is important.

Histamine frequently exists in crude ergot with the alkaloids in sufficient amounts to interfere with the comb reaction produced by the alkaloids when tested by the U. S. P. X method, which involves the application of the freshly prepared fluidextract. Although large doses of histamine alone often produce a bluing of the cock's comb, the amount of histamine present in the usual doses of any fluidextract is never sufficient to cause a perceptible bluing by itself. The amounts existing in a freshly prepared fluidextract are frequently sufficient in quantity, however,

to seriously interfere with the alkaloidal response of many cockerels. The interference is *destructive* rather than *constructive*, thereby causing such fluidextracts to exhibit an *apparent* alkaloidal potency which is lower than that actually present, unless an almost impossible number of birds are used for a single determination. Individual cockerels differ greatly with respect to this histamine interference. Using carefully standardized cockerels, this interference has been repeatedly demonstrated by the use of pure histamine in known mixture with ergotamine, and also by mixing alkaloid-free amine fractions of known histamine content with histamine-free fluidextracts of known alkaloid content.

It has been found to be a fact that any fluidextract prepared by the U. S. P. process contains as much as, or more than the quantity of ergot alkaloids indicated by the test, if, when assayed by the Cock's Comb Method, a satisfactory reaction is obtained from threshold doses of the preparation, regardless of the amine content. Any interference caused by the possible presence of interfering quantities of non-specific amines will result in a lower *apparent* alkaloidal potency than is actually present. This interference provides for a source of probable error in determining the alkaloidal potency of freshly prepared fluidextracts by this method, but such interference is rarely encountered in fluidextracts which are three or four months of age because of the rapid destruction of histamine in the menstruum of this preparation.

Aqueous Extracts of ergot, both liquid and pilular, may exhibit appreciable activity by the Cock's Comb Method even though practically no alkaloids are present. The observed effect is often due entirely to the histamine present. Histamine is more stable in such preparations than in the U. S. P. fluidextract.

(B). ISOLATED GUINEA-PIG UTERUS METHODS.

The effects of the various pharmaco-dynamically active constituents of ergot upon the isolated guinea-pig uterus depend to a great extent upon the condition of the tissue at the time the test is made. Immature virgin uteri are very sensitive and are stimulated to contraction by many substances, among which are the ergot alkaloids, histamine and tyramine. Repeated application of the ergot alkaloids results in diminishing response, while the response to the amines such as histamine and tyramine, is more constant. Histamine is by far the most powerful of the constituents of ergot in producing contraction. Therefore the effect observed from mixtures of these constituents (as found in many ergot preparations) is often due largely to the histamine present, but is also influenced by the alkaloids.

Pregnant uteri, or those taken while the animal is in œstrus are hyper-sensitive, and react in a manner similar to immature virgin strips. All such uteri are unsatisfactory for bio-assay purposes.

Mature guinea-pig uteri, preferably parous, have been found to be most suitable for studying the preparations and constituents of ergot. The action of the various constituents of ergot upon this type of isolated guinea-pig uterus is as follows:

1. *Histamine.*—Histamine is extremely active in producing prompt tonic contractions which are quite constant in repeated application. The effect is transitory, lasting only for several minutes. This substance is the most active of the non-specific amines of ergot, and is often responsible for the greater part of the contractions produced by the usual type of ergot preparations, even though significant amounts of alkaloids are also present.

2. *Tyramine.*—Tyramine is comparatively feeble in its effect. Therefore the small amounts occasionally occurring in ergot or its preparations are not sufficient to exhibit significant activity.

3. *Ergot Alkaloids.*—The active ergot alkaloids are practically ineffective in producing prompt tonic contraction in the usual concentrations. They exert a strong and persistent action, but the effect is one of inhibition or paralysis, rather than stimulation. The active alkaloids can be made to inhibit or totally abolish the contractions produced by histamine. The intensity of the effect of the alkaloids depends entirely upon the concentration and the time of contact. The effect is slow but very persistent. They increase the tonus and rhythmicity of spontaneous contractions.

4. *Mixtures of Histamine and Ergot Alkaloids.*—The application of mix-

tures of these substances, such as is present in many of the usual types of ergot preparations, cause prompt tonic contractions which are due to the histamine present. Repeated application of identical concentrations results in diminishing response due to the inhibiting or paralyzing effect of the alkaloids present in the mixture.

The action of histamine and of the ergot alkaloids, together with the principles involved, have been utilized in developing a method for the estimation of the non-specific amine activity and also a method for the estimation of the specific alkaloidal activity of ergot preparations using this type of isolated guinea-pig uterus. These methods have been described in Parts II and III of this series of articles.

(C). ISOLATED RABBIT UTERUS METHODS.

Strips of isolated rabbit uterus react to drugs in a manner decidedly different from guinea-pig uteri. The isolated rabbit uterus is involved in the well-known Broom-Clark Method for the estimation of the specific alkaloidal activity of ergot preparations. Most satisfactory uteri are obtained from mature rabbits, taken at a time when not in œstrus. Mature virgin or mono-parous uteri are usually satisfactory, but multiparae are best avoided.

1. *Epinephrine.*—Epinephrine, which produces relaxation of the isolated guinea-pig uterus, is extremely active in producing prompt tonic contractions of the isolated rabbit uterus by stimulation of the myoneural junctions of the sympathetic. Under proper conditions, these tonic contractions are constant in repeated application, and are similar in character to those produced by histamine on the guinea-pig uterus.

2. *Histamine.*—Histamine is comparatively feeble in its effect upon strips of rabbit uterus. Instead of causing prompt tonic contraction as it does upon the isolated guinea-pig uterus, the rabbit uterus is set into a series of rhythmic contractions of low magnitude, and this only from relatively high concentrations. Epinephrine is antagonistic to histamine and can be made to inhibit or completely abolish the response of the rabbit uterus to stimulant concentrations of histamine. At the same time, histamine in the presence of epinephrine, is capable of accentuating the epinephrine response, even if the histamine is of itself not present in sufficient concentration to stimulate response of the tissue, as first reported by Pattee and Nelson (28).

3. *Ergot Alkaloids.*—As in the case of the isolated guinea-pig uterus, the ergot alkaloids do not produce tonic contractions of the isolated rabbit uterus in the usual concentrations. They paralyze the sympathetic motor endings (myoneural junctions). Because of this effect, the ergot alkaloids are capable of inhibiting or completely abolishing the response of the tissue to epinephrine. This principle constitutes the basis for the Broom-Clark Epinephrine-Reversal Method for estimating the alkaloidal activity of ergot preparations. Histamine is capable of accentuating the epinephrine response. Therefore the presence of histamine in ergot preparations introduces a source of error. The effect of the ergot alkaloids is slow in developing, but is very persistent. The intensity of the reaction depends upon the concentration present and the time they are permitted to act. In carrying out the method, the time of action is limited to 10 minutes, even though the maximum intensity is not reached during this period. Pattee and Nelson (28) observed that any possible histamine interference could be obviated by replacing the drugged saline solution with fresh solution before observing the final epinephrine response. Such procedure removes any histamine without interfering with the alkaloidal effect. The Broom-Clark Method, as modified by Pattee and Nelson, has been found to be more accurate for estimating the alkaloidal activity of all types of ergot preparations than any other method proposed up to the present time.

(D). PRESSOR METHODS TO DOGS OR CATS.

Pressor methods to dogs or cats are invaluable in studying the activity of ergot in a qualitative way, but are not sufficiently accurate to be dependable for quantitative purposes. Of the

various constituents of ergot, only the active alkaloids and histamine have been found to be present in the general run of crude ergot samples in sufficient amounts to cause significant activity.

1. Histamine.—The blood pressure reaction of histamine is more powerful than that of any other constituent of ergot, although the effects produced by even relatively large doses are transitory. Injected intravenously, histamine produces a sharp fall in blood pressure due to vaso-dilatation, which is followed by a distinct manifestation of cardiac inhibition as evidenced by a decrease in amplitude of pulsations. The blood pressure and heart action return to apparent normality in approximately five minutes, unless the dose is unnecessarily large. Oral administration of histamine or the non-specific amine fraction of ergot produces no pressor or depressor effects.

2. Tyramine.—Tyramine produces a rise in blood pressure but has not been observed to occur in ergot or ergot preparations in sufficient amounts to produce this effect from reasonable doses given hypodermically. The predominance of histamine effect invariably masks that which might be caused by the presence of traces of tyramine.

3. Ergot Alkaloids.—Small doses of the ergot alkaloids produce a slow, but very persistent rise in blood pressure due to vaso-constriction. The induced rises in blood pressure diminish with repeated dosage, due to vaso-motor paralysis, until a condition is reached such that either no effect is produced upon the blood pressure at all, or a fall in pressure results which cannot be raised by epinephrine. A single large dose of the ergot alkaloids can also be made to abolish or reverse the usual effect of epinephrine upon cats but is very difficult to produce in dogs. This phenomenon constitutes the well-known "Vasomotor-reversal" and has been suggested as a method for determining the alkaloidal activity of ergot preparations. The amount of ergot alkaloids necessary to produce this reversal varies greatly with individual dogs or cats, thereby preventing even reasonable accuracy as a quantitative method. Only one trial is possible upon a single animal because of the great persistence of alkaloid effect, thereby preventing a comparison of an unknown preparation with a suitable standard.

4. Mixtures of Histamine and Ergot Alkaloids.—Histamine produces an effect which is antagonistic to that produced by the ergot alkaloids. The injection of these substances in mixture (such as is present in some of the usual ergot preparations) results in a prompt fall in blood pressure due to the histamine present, which is followed by a rise in pressure due to the alkaloid. The presence of histamine in the mixture prevents a full manifestation of alkaloidal effect because of the power of histamine in producing vaso-dilatation, cardiac inhibition, and perhaps increased permeability of capillaries. Histamine has been found to exist in ergot in sufficient amounts to be capable of actually reversing the usual effect of the ergot alkaloids, *i. e.*, an effective dose of ergot alkaloids, if preceded by an effective dose of histamine, produces a fall in pressure instead of the usual rise, even though the dose of the alkaloid is not given until the fall in pressure which follows the administration of the histamine has returned to normal. Because of the persistent paralyzing effect of the ergot alkaloids, the marked interference caused by histamine, and the variation in susceptibility exhibited by individual test animals, pressor methods are adaptable in determining the activity of ergot preparations in only a qualitative way.

V. STABILITY AND PRESERVATION OF CRUDE ERGOT.

Whole or crude ergot is remarkably stable if it is stored in a thoroughly dry condition. In such condition, the temperature does not play an important part. Insect infestation can be avoided by keeping in a dry condition, preferably in a cold place, and by the proper use of naphthalene, carbon tetrachloride, carbon disulphide or chloroform.

When stored in a damp condition, very objectionable changes rapidly take place, the rapidity depending upon the amount of moisture present and the tempera-

ture. The "Acid Number" of the fixed oil increases due to the development of rancidity, the alkaloidal activity decreases, and the non-specific amine activity often increases. As already stated, no relationship exists between the decrease in alkaloidal activity and the increase in non-specific amine content. An appreciably damp condition also increases the liability of insect infestation and causes a rapid growth of mold.

Powdered ergot is less stable than whole ergot unless the fixed oil is extracted before storage. Under proper storage conditions, crude ergot or powdered and defatted ergot can be kept for many years without undergoing serious loss in activity or other objectionable changes.

The samples of better quality (those exhibiting the greatest amount of alkaloidal activity and best condition) exhibit a short, corky fracture and evolve a pleasant aromatic odor. The fractured surfaces of the sclerotia are white or yellowish white and are not glassy-smooth. They are reduced to a brown or grayish brown powder of a rather soft, mealy texture with comparative ease.

Poorer quality samples exhibit a tough, horny fracture and are either practically devoid of odor or evolve a soapy, unpleasant odor. The fractured surfaces of the sclerotia are usually tinted with a brown, blue or purple color and are usually very smooth. They are reduced to a purplish gray powder with greater difficulty than samples of good quality. The resulting powder is composed of more or less sharp, angular fragments and is of a rough texture. The size and general shape do not constitute significant criteria as to the quality, although large grains are usually preferable.

ERGOT PREPARATIONS.

A very large number of different varieties of commercial ergot preparations are available upon the drug market at the present time. Practically all of these different preparations fall into one of three general classes, according to the method of extraction involved, as follows:

1. Liquid Products prepared by extraction of the comminuted drug with an alcoholic, hydro-alcoholic or acid-hydro-alcoholic menstruum, such as Fluidextract of Ergot, U. S. P., 10th Revision.

2. Aqueous Extracts.

(*a*) Liquid products prepared by extraction of the comminuted drug with an aqueous menstruum, such as Liquid Extract of Ergot, B. P. Many of the preparations of this type are purified by concentrating and precipitating some of the extractives by the addition of alcohol.

(*b*) Solid, semi-solid or pilular extracts, prepared by extraction of the comminuted drug with an essentially aqueous menstruum and concentrating to a pilular consistence, such as Aqueous Extract of Ergot, N. F., 5th Edition, and Extract of Ergot, B. P.

3. Preparations Composed of or Containing the Pure Isolated Constituents of Ergot.

The pharmaco-dynamic activity exhibited by these different classes of ergot preparations differs so greatly that one would hardly believe that the same drug had been involved in their manufacture. The nature and amount of activity of freshly prepared ergot preparations depend upon the condition of the crude drug, and the menstruum and technique used in the extraction process, many being practically inactive even when freshly prepared. None of these liquid or semi-solid products is absolutely stable, although some are more so than others. The rate of deterioration in any case depends upon the composition of the menstruum or diluent, exposure to air and light, and the storage temperature.

The medicinal value of any ergot preparation is wholly dependent upon its specific alkaloidal activity. The non-specific amines have no medicinal importance and are of significance only because of the effects produced in experimentation involving the usual pharmaco-dynamic or bio-assay methods.

CLASS (1). PREPARATIONS INVOLVING THE EXTRACTION OF THE DRUG WITH AN ALCOHOLIC, HYDRO-ALCOHOLIC OR ACID HYDRO-ALCOHOLIC MENSTRUUM.

The Fluidextract of Ergot of the U. S. P., 10th Revision, has been found to be the most satisfactory of available ergot galenicals. The prescribed process of manufacture results in a product which, when freshly and carefully prepared, contains practically all of the specific alkaloids and the non-specific amines which were present in the parent drug. Any non-specific amine activity is usually lost within a period of three or four months from the time of manufacture. The hydrochloric acid of the prescribed menstruum plays a double rôle. *First*, it increases the efficiency of the menstruum in extracting the specific alkaloids, and *second*, it increases the stability of the product. Proper control of this acidity is therefore of vital importance. The use of organic acids, such as citric or tartaric, in place of hydrochloric serves no good purpose, in that such departure from the U. S. P. method decreases the efficiency of the menstruum in extracting the alkaloids and also detracts from the stability of the finished product. A menstruum consisting of alcohol or diluted alcohol without acid is less efficient for extracting the ergot alkaloids than one which contains acid and in addition seriously detracts from the stability of the product. Since the ergot alkaloids are unstable in the presence of air and warm temperatures, it has been found distinctly advantageous to concentrate the exhaust percolate (obtained after the reserve portion) at a low temperature under reduced pressure.

(*a*) *Stability of Fluidextract of Ergot, U. S. P.*—This preparation appears to be the most satisfactory of available ergot galenicals from the standpoint of stability, although it is now definitely known that even this preparation is prone to deterioration, regardless of the precautions ordinarily taken in attempts at stabilization.

The non-specific amine activity which may or may not be present, is due almost entirely to histamine. It rarely occurs in commercial fluidextracts or other fluidextracts which have attained an age of more than six months, because of its lability in the medium of this preparation. The deterioration of this amine activity begins immediately at the time of manufacture, and progresses so rapidly that practically none remains after three or four months, regardless of the storage conditions under which the fluidextract is kept.

The specific alkaloidal activity of Fluidextract of Ergot to which the medicinal value of the preparation is due, fortunately is more stable than the non-specific amine activity, but nevertheless, is prone to deterioration. Exposure to air and warm temperatures hasten this loss of activity. Unnecessary loss in activity may be avoided by keeping in well-filled, tightly stoppered containers in a refrigerator or cold-room, or by replacing the air above the liquid in the container with an inert gas such as carbon dioxide or nitrogen. Under such conditions the greater part (approximately two-thirds) of the alkaloidal activity is retained for a period of one year. Frequent opening of the containers, as in dispensing, causes a marked increase in the rate of deterioration. For this reason the capacity of containers used in the distribution of this product to hospitals and dispensing pharmacists should in no case exceed four ounces, while one ounce containers would be even more satisfactory for placing a dependable fluidextract at the disposal of the practicing physician.

Sealing Fluidextract of Ergot in ampuls *in vacuo* provides for a greater degree of stability than other methods of keeping. By such procedure, and storing the sealed ampuls in a cold place, the greater part of the activity is retained for two years.

(*b*) *Bio-Assay Standards for Fluidextract of Ergot.*—An extensive study of the present U. S. P. X Standard Fluidextract of Ergot has revealed that its potency is not constant. Aging this Standard for six months prior to sealing in ampuls, as specified in the U. S. P. is distinctly advantageous. It causes a complete disappearance of non-specific amine activity and provides for a greater degree of stability of the all-important alkaloidal activity since the most rapid de-

terioration takes place during a two- to three-month period immediately following manufacture. Unfortunately, even if careful attention is given to the details outlined in the U. S. P. for the preparation of this Standard, *i. e.*, aging, sealing in hard-glass ampuls *in vacuo*, etc., the resulting product is not absolutely stable. This Fluidextract, therefore, does not constitute an ideal bio-assay Standard for Ergot or Fluidextract of Ergot unless the alkaloidal potency is determined at least every three months by accurate comparison with a standard of constant potency such as ergotamine tartrate, and replacing lots showing deterioration with a new lot of Standard Fluidextract as soon as loss in activity is evident. Only under such conditions would constant potency of the U. S. P. X Standard Fluidextract be insured.

Ergotamine Tartrate $(C_{33}H_{35}O_5N_5)_2.(H_2C_4H_4O_6)$, a crystalline salt of one of the most active of the alkaloids of ergot, has been shown to be entirely representative of the desirable activity of ergot and stable under conditions easily provided. It has been successfully used as a bio-assay standard during this entire investigation. When used in this capacity, the solution must be freshly prepared as required. Ergotamine tartrate is only sparingly soluble in water. The addition of a few drops of dilute hydrochloric acid to the solvent causes imemdiate and complete solution. It has been the practice of the author to prepare a 1 : 1000 solution, then using portions of this to prepare suitable dilutions for experimental application.

CLASS (2). AQUEOUS EXTRACTS OF ERGOT.

(*a*) *Liquid Aqueous Extracts.*—This class of ergot preparations includes those which involve extraction of the drug with essentially an aqueous menstruum and which are marketed in a liquid form. Liquid Extract of Ergot, B. P., as well as a great number of proprietary specialties fall into this class. Many of these aqueous preparations are subjected to processes of purification for the purpose of rendering them suitable for either hypodermic or oral administration.

This investigation has revealed that extraction of the drug with water removes the non-specific amines and appreciable amounts of inert material, but that no significant amounts of the all-important ergot alkaloids appear in the finished product. Any activity exhibited by such preparations is usually due principally to histamine.

The addition of alcohol to the extraction menstruum in amounts ranging from 10 to 50 per cent causes the removal of somewhat greater proportions of the alkaloids, although such menstrua are far less efficient than that of the U. S. P. which contains 2 per cent of hydrochloric acid, U. S. P., in diluted alcohol. Aqueous or hydro-alcoholic menstrua without acid are not only inefficient in extracting the specific alkaloids, but the products obtained by extraction with such solvents are so unstable as to be of no value.

The pharmaco-dynamic activity of such preparations is due almost entirely to exceedingly variable quantities of histamine, which substance is of no value in ergot preparations since it is not responsible for any of the therapeutic virtues of ergot.

(*b*) *Solid, Semi-Solid or Pilular Aqueous Extracts.*—This class includes preparations such as Extract of Ergot, B. P., Aqueous Extract of Ergot, N. F., 5th Edition, the "Ergotins," "Ergotines," etc., which occur on the market as such or in combination with other ingredients in pills or tablets.

These solid or pilular extracts are usually prepared essentially according to the method described in the B. P. for Extract of Ergot or in the N. F. for Aqueous Extract of Ergot. These methods involve extraction of the drug with an aqueous menstruum, and, therefore, result in preparations which are practically devoid of ergot alkaloids, and are therefore worthless. Varying amounts of histamine usually account for any pharmaco-dynamic activity observed. This substance is more permanent in liquid or semi-solid extracts than in the U. S. P. X Fluidextract.

CLASS (3). PREPARATIONS COMPOSED OF, OR CONTAINING THE PURE ISOLATED SPECIFIC ALKALOIDS OF ERGOT.

The important specific alkaloids ergotamine and ergotoxine (otherwise known

as hydroergotinine or amorphous ergotinine), to which the therapeutic value of ergot is due, are now available upon the drug market in the form of their dry salts or in solution. The solutions are subject to deterioration when exposed to air and warm temperatures. The conditions and factors which influence the rate of deterioration of these solutions are, in general, the same as those described under Fluidextract of Ergot. Under proper conditions they are reasonably stable. The dry alkaloids or their salts are stable over a period of many years if they are sealed in ampuls or are otherwise fully protected from air and moisture. In the presence of air and moisture, the dry substances assume brownish tints which are indicative of a loss in potency.

In the first of this series of articles, it was pointed out that ergot preparations available to physicians were highly unsatisfactory, and five possible reasons for this condition were enumerated. In the light of the information yielded by this investigation, it is believed that faulty methods and technique of manufacture, together with exposure of these preparations to improper storage conditions for almost unlimited periods of time before use, are responsible for the unreliability of ergot preparations more than any other factors.

THE CHOICE OF METHODS FOR THE BIOLOGICAL ASSAY OF CRUDE ERGOT AND ITS PREPARATIONS.

Because of the variability in activity exhibited by individual lots of crude ergot, uniformity in resulting preparations can be obtained only by standardization of the finished products. Standardization is possible only by the application of an assay method which measures the therapeutically active constituents. Since the specific alkaloidal activity is wholly responsible for the medicinal value of any ergot preparation, the method of assay must measure only the specific alkaloidal activity, irrespective of any other inert or pharmaco-dynamically active principles which may be present.

A number of chemical and biological assay methods for estimating the alkaloidal content or activity of ergot preparations have been reported during recent years, and shown to yield dependable results, at least in the hands of their originators.

Since a number of these methods are now available, the choice of a method for general use in assaying and standardizing the alkaloidal activity or content of ergot and its preparations resolves itself into a consideration of accuracy or dependability as evidenced by wide usage in the hands of the greatest possible number of investigators.

Up to the present time, no chemical methods have shown sufficient accuracy or dependability in extensive application to receive wide-spread recognition. Of the numerous biological methods now available, only two have received sufficient recognition in extensive application to warrant consideration. These are the well-known Cock's Comb Method, now official in the U. S. P., and the Epinephrine-Reversal Method involving the isolated rabbit uterus. The latter method was originated by Broom and Clark in 1922, and has since been studied and applied successfully by a host of investigators in this country and abroad. These workers have invariably found that the two methods yield similar results but that the Rabbit Uterus Method provides for somewhat greater accuracy than the U. S. P. Method. The evidence obtained in the author's studies have confirmed this conclusion. The chief objection to the Rabbit Uterus Method, as expressed by the various workers, is that it is more difficult of technique and more time-consuming.

The results of this investigation have shown that assays of various types of ergot preparations by the Cock's Comb Method are not always dependable, due to the occasional presence of interfering quantities of non-specific amines and to changes in the susceptibility and response of

individual test cockerels. Even in the complete absence of interfering pharmaco-dynamically active substances, as in the case of fluidextracts which have been aged several months, causing a disappearance of non-specific amine (histamine) activity, the Rabbit Uterus Method has been found to be more accurate and more dependable than the Cock's Comb Method in estimating the alkaloidal activity of all types of ergot preparations, regardless of how carefully every detail of technique is observed in the application of the Cock's Comb Method. In assaying crude ergot by the Cock's Comb Method, which necessitates the application of a freshly prepared fluidextract, the occasional presence of high proportions of histamine cause such marked interference that an almost impossible number of birds must be used on a single sample in order to attain even a reasonable degree of accuracy.

THE POTENCY OF FLUIDEXTRACT OF ERGOT.

Since ergotamine and ergotoxine have become available, an appreciable amount of published and unpublished information upon the clinical or therapeutic application has established that an average oral dose of either of these alkaloids, or its equivalent in an ergot preparation must approximate 1.0 mg. to be effective.

This investigation has shown that it is possible to prepare Fluidextract of Ergot containing 0.05 per cent of ergot alkaloids (in terms of either ergotamine or ergotoxine as determined by biological methods) from the average crude ergot now available. A fluidextract of this potency contains the equivalent of 1.0 mg. of ergotamine or ergotoxine in the present U. S. P. dose of 2.0 cc.

The author concludes, therefore, that this constitutes a suitable potency for Fluidextract of Ergot.

TOXICOLOGICAL ASPECTS OF ERGOT AND ALKALOIDAL PREPARATIONS OF ERGOT.

The only constituents of ergot, regardless of the natural condition of the drug, which occur in sufficient amounts to be capable of producing either acute or chronic toxicological symptoms by oral administration are the active specific alkaloids, upon whose presence the therapeutic value of ergot depends. The ergot alkaloids are active by either oral or hypodermic administration.

The effects of an adequate dose of the active ergot alkaloids persists for a period varying from one hour to one day or more, depending upon the dose and the individual susceptibility or condition of the patient. This must be taken into consideration to avoid the possibility of producing toxic symptoms due to a cumulative action, when such preparations are applied therapeutically in repeated dosage at short intervals. They are responsible for the gangrenous symptoms frequently observed in experimental animals. These symptoms can be produced only by the administration of repeated doses at short intervals over a considerable period. If the prescribed two weeks' rest period is observed on cockerels in applying the U. S. P. method of assay, gangrene rarely occurs. This condition frequently develops, however, if the period between doses is appreciably shortened. The same applies to other subjects as well as cockerels.

Although a number of other non-specific amines may occur casually in insignificant amounts, histamine quite often exists in crude ergot and some of its preparations in sufficient amounts to exhibit appreciable pharmaco-dynamic activity. None of these amines or aminobases play a part in the therapeutic action or toxicology of crude ergot or oral ergot preparations, because of the fact that they are totally inactive by oral administration. Even by the hypodermic administration of amounts of histamine comparable to those occurring in the usual doses of ergot preparations, the effects produced, although prompt, are exceedingly transitory. These non-specific amines serve no good purpose in either oral or hypodermic preparations, however, and should be excluded from all preparations as much as possible, but more especially from those intended for hypodermic use.

RECOMMENDATIONS.

1. *Storage of Ergot.*—Crude ergot should be stored in a thoroughly dry condition and in an absolutely dry place at all times.

Powdered ergot should be de-fatted before storing for any appreciable period, to avoid the development of rancidity and unnecessary loss in potency.

Ergot is subject to insect infestation under any conditions of storage but is most likely to occur if a damp condition prevails. The judicious use of naphthalene, carbon tetrachloride, chloroform, etc., and storing in a dry, cold place can be made to adequately control this condition.

2. *Method of Assay of Crude Ergot and Fluidextract of Ergot U. S. P.*—Because of its superiority over the present official method of assay with respect to accuracy and dependability in estimating the specific alkaloidal activity, it is recommended that the "Epinephrine-Reversal," otherwise known as the "Isolated Rabbit Uterus Method" be adopted in the next Pharmacopœia in place of the now official Cock's Comb Method, for the biological assay of Ergot and Fluidextract of Ergot.

3. *Biological Assay Standard.*—Because of variability in susceptibility of individual test objects the application of any biological assay method for Ergot or its preparations necessitates the use of a standard preparation for comparison. This standard preparation must be constant in potency. In the light of results obtained in this investigation only two possibilities remain, either of which would prove a satisfactory standard, as follows:

(*a*) The use of Crystalline Ergotamine Tartrate, containing 84.5 per cent of ergotamine base, to be distributed to manufacturers as such, or in the form of the freshly prepared solution, sealed in ampuls in vacuum and bearing an expiration date, or

(*b*) The use of the Standard Fluidextract of U. S. P. X but which is accurately adjusted to a definite potency by comparison with ergotamine tartrate and then sealed in ampuls in vacuum. As soon as a given lot shows deterioration, to be determined by frequent check assays, a new, accurately standardized lot would be pressed into use. As in (*a*), an expiration date must appear on the label.

It is recommended that one of these two alternatives be adopted in the next Pharmacopœia.

4. *The Potency of Ergot and Fluidextract of Ergot.*—Because of the now known posology of ergot alkaloids, and the alkaloidal potency shown by crude ergot now available, it is recommended that a potency equivalent to not less than 0.05 per cent of ergot alkaloids in terms of ergotamine base be adopted as the minimum for crude ergot.

It is recommended that a potency equivalent to not less than 0.04 per cent and not more than 0.06 per cent of ergot alkaloids in terms of ergotamine base be adopted for Fluidextract of Ergot.

5. *Expiration Date for Fluidextract of Ergot.*—Because of the fact that Fluidextract of Ergot is prone to deterioration, and to prevent inactive fluidextracts from falling into the hands of physicians, it is recommended that an expiration date be required to appear upon the label, and that this expiration date be such that the fluidextract will not be used for medicinal purposes for more than one year from the date of final assay and standardization, or, that the standardization of potency shall be such that the alkaloidal activity will not be less than 0.04 per cent of ergot alkaloids in terms of ergotamine base, upon the date of expiration.

6. The Containers for Distributing Fluidextract of Ergot.—Because exposure to air is the most important factor in causing deterioration of Fluidextract of Ergot, and because warm temperature and light hasten the destruction of the ergot alkaloids, it is recommended that the next U. S. P. require that this preparation be kept in a cold place in tightly stoppered, non-metallic containers, filled as nearly completely, as practicable, carefully protected from light, and distributed to retail pharmacists in original amber-colored glass containers having a capacity of not more than four fluidounces.

7. Improving the Quality and Stability of Fluidextract of Ergot by Aging.—Since the most rapid deterioration of the alkaloidal activity of Fluidextract of Ergot occurs during a period of one to three months immediately following manufacture and since aging in a cold room further provides for the elimination of undesirable non-specific amine activity and the precipitation of variable amounts of an inactive sludge which should be discarded, it is recommended that the next revision of the U. S. P. require that Fluidextract of Ergot be aged for three months in completely filled tightly-stoppered, non-metallic containers in a cold place protected from light before standardizing and packaging in small containers for distribution.

8. The HCl Content of Fluidextract of Ergot.—Because of the great influence exerted by the presence of hydrochloric acid in increasing the efficiency of the extraction menstruum in extracting the specific alkaloids from the powdered drug, and in stabilizing the alkaloidal activity in Fluidextract of Ergot, the amount of hydrochloric acid used should be very carefully controlled, both during the process of extraction and in the finished product.

9. Rancidity of Crude Ergot.—The "Acid Number" of the fixed oil of ergot is an index of rancidity, and can be determined by a method described in Part VII of this series of articles. An "Acid Number," as defined in this article, of more than 15 shows an objectionable degree of rancidity, and indicates that the drug had attained great age, or that it had seriously suffered from improper storage conditions.

It is recommended that this test for rancidity be adopted in U. S. P. XI and that a maximum "Acid Number" of 15 be permissible for crude or powdered ergot.

10. Aqueous Extract of Ergot, N. F., 5th Edition.—Because the method of preparation specified by the N. F., 5th Edition, for Aqueous Extract of Ergot, has been found to result in a product which is practically devoid of specific ergot alkaloids, regardless of the alkaloid content of the parent drug, it is recommended that this or any other preparation not containing significant and defined amounts of specific alkaloidal activity be omitted from succeeding editions.

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STANDARDIZATION AND DETERIORATION OF RENNIN.*

BY L. D. HAVENHILL.

Early this spring while removing some drugs from a storage cabinet, I uncovered some samples of rennin on which considerable work was done in 1912. Dr. Klein in his report on Digestive Ferments and Glandular Products (4) finds that the "N. F. method as an absolute means of estimating rennin activity is unreliable" and suggests the possibility of adopting a standard rennin for control purposes. It therefore occurred to me that a reëxamination of these would furnish useful information concerning their deterioration, and at the same time afford an opportunity to check upon the N. F. V method of assay.

When these samples were originally assayed, fresh, whole milk from a mixed herd and averaging 3.5% butter-fat by Babcock test was used. No serious discrepancies in the time of coagulation for the daily samples of milk were observed.

STANDARDIZATION OF MILK.

Before reassaying these samples, a series of daily assays on milk was made using a new sample of powdered rennin—Rennin No. 12, of Table III. The results of these assays are given in Table I.

TABLE I.—THE COAGULATING POWER OF THE SAME RENNIN SAMPLE[1] ON DIFFERENT SAMPLES OF MILK.[2]

Day of July '29.	Milk sample No.	Time of coagulation.	Coagulating power.[3]	Day of July '29.	Milk sample No.	Time of coagulation.	Coagulating power.[3]
6	1	10.7	23,300	17	12	10.75[6]	23,200
7	2	9.2	27,200	18	13	12.80[7]	19,500
8	3	11.1	22,500	19	15	11.06[8]	22,600
9	4	10.9	22,900	20	16	12.06[9]	20,700
10	5	10.1	24,700	23	17	11.8[10]	21,100
11	6	8.6	29,000	24	18	9.00	27,800
12	7	11.10	22,500				
13	9	11.3	22,100	Maximum		12.8	39,000
14	10	6.4[4]	39,000	Minimum		6.4	19,500
16	11	11.40[5]	21,900	Average		10.5	23,800

SUB-NOTES TO TABLE I.

[1] Sample of Powdered Rennin No. 12 received at the Laboratory, 4–15–29.

[2] Whole Jersey milk, drawn about five o'clock A.M. and tested about ten o'clock A.M. of the same day. The temperature of the milk when delivered from the dairy ranged from 15°–18° C. and a temperature of from 13° C. to 18° C. was maintained thereafter. Babcock test, averaging about 5% butter-fat.

[3] N. F. V method used. Determinations made in a water-bath electrically controlled to

* Scientific Section, A. PH. A., Rapid City meeting, 1929.

0.3° C. The milk was measured into the tubes and heated in a second water-bath at 60° C. until the temperature of 43° C. was reached and then transferred to the test bath and 1 cc. of the rennin solution at room temperature (26°–28° C.) added. Ten seconds used for adding the rennin solution, and fifteen seconds additional for mixing by stirring with a glass rod. Time noted at the beginning of the addition of the rennin and at the beginning of the coagulation. No deduction was made for the time required to add the rennin.

[4] Acidity—0.18%, calculated as lactic acid. [5] Acidity—0.15%. [6] Acidity—0.16%. [7] Acidity—0.146%. [8] Acidity—0.15%. [9] Acidity—0.148%. [10] Acidity—0.146%.

Albert Zimmerman, of York, Pennsylvania, in a communication to me, in 1911, stated that it was necessary to use standardized rennin in order to determine whether the milk used in testing the activity of rennin was fast or slow. He standardized the rennin for this purpose by testing it against twelve different specimens of milk as daily supplied from a reliable source and took the average.

Table II shows the power of Rennin No. 12 by the Zimmerman method of standardization.

TABLE II.—VALUES TAKEN FROM TABLE I FOR RENNIN NO. 12.

Series.	Milk samples average.	Average time (minutes).	Coagulating power.
1	1–13	10.4	24,000
2	2–15	10.4	24,000
3	3–16	10.6	23,600
4	4–17	10.7	23,400
5	5–18	10.5	23,800

Any one of these values for Rennin Sample No. 12 is regarded as within the limit of experimental error. It is, however, recognized that there may be a seasonal variation in the time of "set up" for milk, and this should be investigated. But since the assays in 1912 and 1929 were each made in the late spring and early summer, the possibility of seasonal variation in these results is a remote one.

OPTIMUM TEMPERATURE.

The assays in 1912 were made at 40° C. instead of 43° C. but otherwise in each case the technique of the N. F. V was observed.

The matter of temperature was given very careful consideration in 1912 and also again in 1929. Temperatures of 35° C., 37.8° C., 40° C. and 43° C. have been variously recommended for the assay of rennin. Doubtless each temperature has some point in its favor. It would seem logical that the optimum tem perature, *i. e.*, the temperature at which it acts most rapidly, would be the choice of all. This is stated to be 40.5° C. (11) and 41° C. by Harper F. Zoller (13). A curve plotted by me in 1912 located the optimum point at 43° C. and another curve plotted by my assistant in the same year, but using different milk and a different sample of rennin, showed the optimum temperature to lie between 40° and 43° C. The observations supporting the temperature of 43° are that the curve is very flat between 40° and 43°, and that the higher temperature is preferable because the addition of the rennin reduces slightly the temperature of the milk, and that the beginning of the "set up" is sharper and the total time shorter.

A replotting of the curve with Rennin 12 and milk samples 9, 12 and 13 located the optimum temperature between 38° and 42° C. and centering closely around

40° C. The temperature and age of the standard rennin solution and the temperature of the test and age of the milk are factors which must be reckoned with in determining this optimum temperature—too many to be controlled by a single pair of hands.

As a result of these optimum temperature experiments the following are deduced:

1. The acidity of milk drawn at 5:00 A.M. and refrigerated does not increase in acidity between the hours of 10:00 A.M. and 3:00 P.M. if kept at or below 15° C.

2. That this milk requires a longer time for coagulation at 3:00 P.M. than at 10:00 A.M.

3. That the difference in time for coagulation between 10:00 A.M. and 3:00 P.M. is greater when tested at 43° C. than when tested at 35° C.

4. That standard rennin solutions deteriorate more rapidly at 29° C. than at 25° C.

5. That the deterioration in the standard rennin solution is greater when determined by standard milk at 43° C. than at 35° C.

6. That the optimum temperature for different samples, of rennin and of milk, may vary within narrow limits, perhaps 3° C.

7. That the law of Segelcke-Stork (the product of the mass of rennin by the time required for the coagulation of the milk operated upon is a constant number), holds true at least within the limits of experimental error when the conditions do not differ too widely from those of the N. F. V.

8. The rennins are not completely soluble in water. Test portions of the liquid containing the flocculent matter coagulate a given specimen of milk more rapidly than corresponding portions of the clear liquid.

THE ANALYSIS OF COMMERCIAL RENNINS.

The results of the analysis, assay and reassay of the different samples of rennin are shown in Table III.

TABLE III.—TESTS ON VARIOUS SAMPLES OF RENNIN.

Sample No.	Starch, etc.	Ash %.	NaCl %.	Coagulating power in 1912.	Coagulating power in 1929.	Loss % in 17 years.
1	None	4.1	3.6	15400	6200	60
2	None			15200	2700	82
3	None	6.7	5.8	19500	7700	60.5
4	None			1:120	1:2.5	98
5	None	7.6	6.8	16100	5700	64.6
6	None	6.9	4.1	22000	Lost	
7	None	8.2	4.2	20000	250	99
8	None	11.5	9.6	15100	130	99
9	None	4.9	1.5	20800	2500	88
10	None	9.5	7.6	4600	Less than 300	
11	None	5.4	1.9	23600	7500	68
12	None	12.0	10.8		23800	

COMMENTS ON SAMPLES OF RENNIN.

The samples 1–11 were collected during the winter and spring of 1912, no particular care was taken to preserve them other than to keep the containers tightly stoppered. They were filed away in a storage cabinet some time in June 1913, where they remained until June 1929, protected from the light but subjected to the fluctuations of ordinary laboratory temperatures.

No. 1.—Powdered Rennet, claimed to be 1:30000. Received in Laboratory 5–13–12; 1-ounce sample in original amber-colored glass bottle. Bottle nearly full. Odor good. Sample shows no outward sign of deterioration.

No. 2.—Powdered Rennet, claimed to be 1:30000. Received in Laboratory 1–16–12. Sample transferred from original container to a 2-ounce flint-glass bottle. Bottle nearly empty. Odor good. Sample slightly darkened in color, otherwise in good physical condition.

No. 3.—Powdered Rennet, claimed to be 1:30000. Received in Laboratory in 1911. Sample transferred from original container to a 2-ounce flint-glass bottle. Bottle nearly full. Odor good. Sample shows no outward sign of deterioration.

No. 4.—Sample of liquid Rennet, claimed to be 1:120. Received in Laboratory in 1912. Kept in original 4-ounce flint glass container. Shows no outward sign of deterioration.

No. 5.—Powdered Rennin, claimed to be 1:15000. Received in Laboratory in May 1912; 1-ounce sample in original amber-colored glass bottle. Bottle two-thirds full. Odor good. Sample shows no outward sign of deterioration.

No. 6.—Powdered Rennin. Sample missing.

No. 7.—Powdered Rennin, claimed to be about 1:30000. Received in Laboratory in 1912; 1-ounce sample in original amber-colored glass bottle. Bottle about two-thirds full. Odor fair. Sample shows no outward sign of deterioration.

No. 8.—Soluble Rennet, powdered, claimed to be about 1:30000; 1-ounce sample transferred to a flint-glass bottle Bottle full. Odor good. Sample shows no outward sign of deterioration.

No. 9.—Rennin, scaled rennin. Sample transferred to a $^1/_2$-ounce flint-glass container. Odor fair. Sample discolored and fused into a sticky mass. Physically unfit for use.

No. 10.—Rennin. Sample transferred from original container to a $^1/_2$-ounce flint-glass bottle. Bottle about one-half full. Odor fair. Sample very dark in color but otherwise in good condition.

No. 11.—Rennin. Scaled rennin, claimed to be 1:30000; 1-ounce sample in original amber-colored glass container. Bottle about one-half full. Odor not good. Discolored and fused into a sticky mass. Physically unfit for use.

No. 12.—Powdered Rennet, claimed to be 1:30000. Sample received, 4–15–29; 1-ounce sample kept in original amber-colored glass bottle. Odor good. Fine, white powder.

COMMENTS AND CONCLUSIONS.

1. It appears to be feasible to prepare a standard powdered rennin that when properly kept, in a well-stoppered amber-colored bottle in a cool place, will show but little deterioration even after a lapse of several years.

2. The activity of an unknown sample of rennin should be checked against a standard sample of rennin.

3. A rennin may be standardized with a fair degree of accuracy using the method proposed by Albert Zimmerman, which is very similar to the procedure suggested by Dr. J. D. Frederikson of Little Falls, New York.

4. A temperature of 40° C. is, on the whole, preferable to 43° C. for the assay.

5. Only powdered rennin containing sugar of milk and otherwise corresponding to the N. F. V requirements for purity should be recognized in the N. F. VI.

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ABSTRACT OF DISCUSSION.

F. O. Taylor remarked that the author had obtained some extraordinary results; results in the past have been at variance and also the methods; the author has contributed to a better understanding and explained the limitations of the test. He said that it is necessary to use a standard for rennin comparable to that employed by manufacturers for pepsin; to use a method without comparison, usually invites variation.

The author stated that Mr. Taylor's suggestion prompted him to go over the work again because of the variance in results; he believed that not only different samples must be collected, but from several dairies at various seasons of the year.

James C. Munch referred to the distribution of standards for rennin by the Bureau of Chemistry, which presented difficulties in the keeping of a series of standard cows, etc. He said the American Drug Manufacturers' Association had obtained definite standards for this work. The report of Mr. Havenhill shows that rennin may be stabilized for a long period of time.

REGISTERED PHARMACISTS IN HOSPITALS.

The following resolution was adopted at the Baltimore meeting of the AMERICAN PHARMACEUTICAL ASSOCIATION:

> WHEREAS, Pharmaceutical Service to the sick in the Hospitals of the United States is an important branch of medical care and should be supervised by registered pharmacists, be it
>
> *Resolved* that the AMERICAN PHARMACEUTICAL ASSOCIATION urge upon the authorities in charge of hospital standardization, the advisability of placing Hospital Pharmacies under the supervision of Registered Pharmacists, and
>
> *Be It Further Resolved*, that the Council of the AMERICAN PHARMACEUTICAL ASSOCIATION be requested to assign to the proper officers or committees of this ASSOCIATION, the task of preparing a suggested set of standards of adequate pharmaceutical service, equipment and personnel for Hospitals of various grades to the end that such suggestions may be available to Hospital Organizations if, and when, requested.

AUTOMATIC DRUG MACHINES PROHIBITED IN VICTORIA.

At the instance of the Pharmacy Board, the use of automatic drug selling machines has been prohibited. According to the *Australasian Journal of Pharmacy*, the Chief Secretary (Mr. T. Tunnecliffe, M. L. A.), concurs in the view that these machines have become a source of embarrassment to pharmacists. The Victorian Board has shown wisdom and foresight in securing the prohibition order before vested rights accrue. It is hoped now that similar action will be taken in New Zealand and the other Australian States.

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THE QUANTITATIVE DETERMINATION OF SILVER IN ORGANIC COMPOUNDS.*

BY JOSEPH L. MAYER.

The United States Pharmacopœia, on page 63, directs that the following method be employed for determining the amount of silver in the official compounds of silver and protein:

> Ignite about 2 Gm. of strong Silver-Protein accurately weighed in a porcelain crucible until all of the carbon is burned off. Transfer as much as possible of the residue to a beaker, add to the crucible 5 cc. of nitric acid, warm to dissolve any adhering silver, and transfer the solution to the beaker with the aid of a little distilled water. Cover the beaker and heat on a water-bath until all of the metallic silver is dissolved, adding a little more nitric acid if necessary. Filter into a flask, wash the insoluble residue thoroughly with distilled water, cool and dilute with distilled water, if necessary, to about 50 to 75 cc. Add 2 cc. of ferric ammonium sulphate T. S., and titrate with tenth-normal potassium thiocyanate. Each cc. of tenth-normal potassium thiocyanate corresponds to 0.01079 Gm. of silver.

Recently many samples of mild silver-protein solution were submitted to me to be assayed for their silver content and in employing the above method it was difficult to obtain concordant results and I, therefore, adopted the following procedure:

Accurately weigh about 1 Gm. of the silver-protein, or accurately measure 5 cc., or accurately weigh about 5 Gm. of the solution and transfer to a Kjeldahl flask. In the case of the solution evaporate over a naked flame until the residue is practically dry, then add 10 cc. concentrated H_2SO_4 and 5 cc. concentrated HNO_3 and with the flask in an inclined position and a funnel in the mouth to act as a reflux condenser, heat over a naked flame until the material is colorless. (Should difficulty be experienced in obtaining a colorless solution, heat until the appearance of white fumes, allow to cool and add 5 cc. concentrated HNO_3 and heat again over naked flame as before.) Allow to cool, add 75 cc. of distilled water, 5 cc. of concentrated HNO_3, 2 cc. ferric ammonium sulphate indicator and titrate with $N/10$ KSCN.

This method in addition to being rapid, possesses the additional advantage that the entire operation of destroying organic matter, dissolving the residue and titrating are all done in the same flask, the result being there is no danger of loss from foaming, spurting, transferring, filtering, etc., factors which serve to weaken the U. S. P. procedure.

RESEARCH AND ANALYTICAL LABORATORY,
LOUIS K. LIGGETT COMPANY,
NEW YORK.

"What Is the Pharmacist's Professional Service Worth?" Robert J. Ruth.—The paper is based upon a personal experience which the writer recently had at one of the largest hotels in the country. He had patronized the barber shop, the public stenographer and the drug store in the hotel on the same afternoon. The pharmacist rendered professional service for which he apparently charged nothing while the barber and the public stenographer charged handsome fees for their time and services.—Section Practical Pharmacy and Dispensing, A. PH. A.

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* Read at the 1930 meeting of the New York State Pharmaceutical Association.

DEPARTMENT OF BUSINESS MANAGEMENT

Conducted by Paul C. Olsen.*

COMMENTS, QUESTIONS AND SUGGESTIONS ARE INVITED AND WELCOME.

Readers are invited to submit comments, criticisms and suggestions regarding the material which appears in this department. The Editor also will undertake to answer questions regarding general problems of business management. Letters of general interest will be published, but the writer's name will not be revealed without his permission.

CAUSES OF LOST DRUG STORE PROFITS.

BY PAUL C. OLSEN.

The following is a tabulation of some of the principal causes of lost profits in drug stores. Such a list usually proves of greatest interest to the most successful druggists. The reason is that the druggists who are the most successful are the ones who are keenest and most desirous to improve their success. This very attitude of mind doubtless explains their prosperity. To any druggist who really wants to check over his own practices to make sure he is avoiding to the greatest degree possible the most important of the causes of lost profits in a drug store, this tabulation should be of some interest.

1. Spoilage of Stock Purchased.—Spoilage is most evident in perishable merchandise and, therefore, can be avoided there to the greatest extent. This, however, is not the only place in which spoilage occurs. Anyone who has bought a long established drug store has had the experience of going through the prescription room stock, if it has not been carefully maintained, and throwing away dozens of items therapeutically useless for which at one time good money had been paid. Shopworn goods also are in this class; the merchandise is all right but its appearance is not. On the other hand, some druggists hesitate to discard stale merchandise of a perishable nature, preferring to obtain the immediate profit, although such profits when obtained are at the risk of great future losses of prestige and patronage.

2. Loss of Merchandise.—These losses may be actual thefts. More frequently they result from failure to carefully check purchases when received; careful checking prevents the throwing away of small items with empty cartons and brings to light actual shortages in the order as delivered. Most frequent of all losses of merchandise, undoubtedly, are the losses which result from merchandise being pushed further and further aside, especially in dark corners of the cellar until finally its existence is forgotten altogether.

3. Waste of Merchandise.—Waste is most frequent when bulk merchandise is sold. This waste results not only from down-weight, but also from inevitable shrinkage from the handling incident to sales in bulk. This is one reason, for instance, that progressive druggists who sell ice cream to be taken out of the

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store sell it only in packages and never in bulk. Greeting cards are another class of merchandise in which losses of this kind are likely to occur.

4. Cash Leaks.—Cash leaks occur in drug stores largely because druggists do not use the facilities which they have for keeping track of cash. In many stores in which expensive and elaborate cash registers are installed it is often the practice not to verify the register totals every day. Carelessness on the part of the management inevitably encourages carelessness on the part of sales people in handling cash. For those employees who yield to temptation or who are downright dishonest, the evident existence of carelessness in handling cash is just the encouragement needed to cause them to begin their peculations.

There is just one way to control cash effectively in a drug store and that is to verify the register totals immediately after the store closes for the night. This verification should be made, of course, by some responsible person. Any discrepancies are thus brought immediately to light and unintentional mistakes and errors can be corrected while they are still fresh in the minds of the sales people making them. In stores which have a large C. O. D. delivery business, careful watch of each and every delivery is important because such cash is usually received through the back door and not in the customary manner. Furthermore, it is a common practice, of course, to send change with the package, which further complicates the handling of the cash, unless great care is taken.

5. Failure to Record Charge Sales.—Even in drug stores which do an important amount of charge business, the methods used for recording these sales are not as formal and elaborate as they are, for instance, in a department store. Indeed, they cannot be, because the small amount of most purchases in a drug store does not justify such records. None the less, it is plain that a failure to record even a single dollar's charge sale means that ten dollars of additional sales must be made to overcome the loss in profits from this one error. In fact ten dollars is probably a liberal estimate, because not every drug store to-day is fortunate enough to make a net profit of 10 per cent of sales.

The remedy for the lost profits resulting from a failure to record charge sales is to make the recording of such sales as easy as possible. This usually means putting charge slips not in just one place in the store but in every place at which such sales are likely to be made. If sales people will record on these slips at the time sales are made some memorandum of what has been sold, the details can be filled in later. It often happens in a busy store that when several people are waiting to be served, all a sales person has time to jot down is a brief memo. This usually is enough for the time being; the details can be filled in later, but if no memorandum at all is made under such circumstances, it is easy to see how some transactions and some items may be forgotten in the rush of business.

6. Failure to Buy Salable Merchandise in Sufficient Quantities.—It is a fact that upon many items of popular merchandise retail druggists buy in such small quantities that this merchandise has to be reordered as frequently even as two or three times a week. Furthermore, the fact is that such reorders when given are for exceedingly small quantities. The result is that on such merchandise of proved salability, druggists frequently do not have in stock the very merchandise which by this rapid turnover has proved itself to be exceedingly easy to sell.

This is serious not only on account of the immediate loss of such sales but also

because it gives customers the impression that the store does not have the merchandise they want to buy. One or two such experiences like this are likely to lead a person to transfer his business to some other store. Drug stores depend for their success not upon single sales to a constantly changing group of people, but rather upon a long series of sales to a relatively small and unchanging group of people.

7. Failure to Display Salable Merchandise.—As a direct result of the practice that many druggists have of buying merchandise of proved salability in such small quantities that stocks are exhausted and have to be reordered every few days, it is plain to see that a druggist never has on hand a sufficient quantity of such merchandise to make a worthwhile display.

No one denies the selling power of effective displays inside of a drug store and in its windows. A druggist cannot display all the ten thousand or fifteen thousand items in his stock. He must choose for special selling effort some from this extensive stock. He cannot choose the comparatively small number of items of proved salability for such display unless he buys a sufficient stock of them at a time to make possible a display.

8. Merchandise Stock Not Sufficiently Varied.—In these days of simplification and stock control, the statement that druggists do not have sufficient stock on hand seems to strike a false note. As a matter of fact an examination of the stock of drug stores which are conspicuously and notoriously over-stocked usually reveals not that they have too many different kinds of merchandise on hand, but rather that they have too much of some merchandise of doubtful salability. A study of the stocks of drug stores offered at auctions will verify this statement.

On the other hand, it is well known that the druggists who are freest from competition are the ones which have the reputation for stocking many more different kinds of merchandise than their competitors. People go to them again and again with a certain assurance that if anybody has the merchandise they want, drug stores of this kind will have it.

9. Purchase of Excessive Quantities of Merchandise of Unproved Salability.—Profits in a drug store are determined by the gross margins obtained, the volume of business and the rate of turnover. In choosing a particular item of merchandise a druggist is apt to overemphasize the importance of gross margin as a determinant of profits because it is much more obvious in its influence than are volume and turnover. It is well to remember, however, that gross margins are obtained only when sales are made, and therefore that volume and turnover absolutely control.

10. Poor Service.—Poor service may range all the way from a slovenly and ill-kept store to disagreeable and poorly informed sales people, slow delivery service, and all such similar factors which in a store's relations with its customers help or hinder its growth. Good will is vital to a drug store because it is or hopes to be a permanent feature of the community life. The losses from poor service therefore are multiplied by the number of possible sales that might be made to customers unfavorably influenced by poor service.

11. Failure to Advertise.—Store displays sell merchandise only to the people who come into the store. Window displays help to sell merchandise only to the people who pass the store. To the larger group who neither come in nor pass the

store some productive means of attracting these possible customers to the store is desirable, and a failure to make use of advertising for this purpose means lost profit opportunities.

12. Failure to Use Salesmanship Effectively.—The most profitable place in which to use salesmanship in a drug store is on those occasions when customers enter who are undecided what to buy. They may know what they want; for instance, a camera, but a failure on the part of the sales person in the drug store to understand both his customer and the merchandise may result in the customer making an unfortunate choice and the store losing an opportunity for service and profits. For instance, a customer best suited with a twenty-dollar folding camera may be sold a two-dollar box camera, simply because the only reason the sales person can offer for the difference in price is the lame and halting remark, "One must be of better quality than the other."

APPLICATION OF RESEARCH TO PROBLEMS OF DRUG STORE MERCHANDISING.*

The drug industry, or rather the group of industries which are dependent upon the drug store as an outlet for merchandise, have been considering, through their accredited representatives, a comprehensive program of research. So far this discussion has been largely in terms of a merchandising survey of retail drug stores similar to the intensive survey of retail grocery stores made in Louisville, Kentucky, during the first half of 1929.

As a member of the staff of the Department of Commerce who was engaged on that survey, I have been requested to make this talk to your ASSOCIATION, suggesting what benefits this industry might derive from such a survey.

It seems to me that the task which must be set for such a survey is that of forecasting the destiny of the drug store. We are interested in this destiny from two viewpoints: that of the manufacturers and consumers who must use the drug store as a medium for dealing with each other, and that of the proprietors of such retail establishments. What the public and the manufacturer are most directly interested in is the fate of the drug store as a merchandise outlet. The central point of interest for the retail druggist is the fate of the drug store as a profit-making enterprise.

Let us survey briefly the knowledge we already have on these points and suggest what additions may be made to our stock of information by the proposed investigation.

The most authentic information which we now have concerning the drug store as a merchandise outlet is probably that which may be drawn from the census of distribution for 11 cities conducted in 1926. At that time we found that drug stores made up between 4 and 5 per cent of all retail outlets. They were exceeded in number by the following classes: Groceries and delicatessen; ice-cream and soft drink parlors and restaurants. In other words, the drug store was the most

* Address by Wroe Alderson[1] before the Section on Commercial Interests, of the AMERICAN PHARMACEUTICAL ASSOCIATION, Baltimore—May 8, 1930.

[1] Business Specialist, Domestic Commerce Division.

numerous outlet next to these three types dealing directly and exclusively with foods.

Figures over a period of years from agencies which collect statistics on number of outlets, indicate an increasing percentage of drug stores among all retail outlets. In particular, it appears that the coming of the chain drug store has, in most cases, represented a net addition to the total number of drug store outlets. In 1926, for the 11 cities studied, independent drug stores still constituted over 88 per cent of this type of outlet. This fact was greeted with some surprise by observers who had been impressed by the really widespread and fast growing development of the drug chains.

The chain outlets average somewhat greater in size, and yet 70 per cent of all sales through drug stores were made through independent outlets. In the cities studied, drug stores accounted for a considerable portion of all retail sales ranging from less than $2^1/_2$ per cent to nearly $5^1/_2$ per cent, and being about 3 per cent here in Baltimore.

Perhaps the most important factor in the sales through drug stores is the broad range of commodities covered by such sales. The modern drug store is still selling medicines, both the prescription and the proprietary variety; but in addition, a great food business has developed in the drug store, including candy, ice-cream and soft drinks, and in many cases, meals and lunches. The drug store is an outstanding distribution channel, particularly for ice-cream and candy. It has very rapidly become one of the leading outlets for tobacco products of all kinds and for tobacco accessories. In addition a wide range of products is found under the headings of electrical goods and rubber goods. Beyond these classes various drug store specialties are found in practically every conceivable department of merchandise.

In the experimental census of distribution, drug stores reported sales for 60 of the 73 separate commodity departments which were set up for the survey. The departments in which drug stores reported no sales can be very briefly enumerated, giving, perhaps, the best indication of the nearly universal character of drug store merchandise. These departments in which the drug store reported no sales were automobiles, caskets, coal and wood, fish, fur, harness and saddles, hay and grain, ice, iron and steel, livestock, lumber, meat and plumbing and heating fixtures. It may be that when the reports are available from the national census of distribution which is now being taken that drug stores will be found to be handling these commodities also. This would be scarcely less surprising than some of the departments in which the drug store already makes sales, such as agricultural implements, arms and ammunition, calculating machines and typewriters.

It is probably true that the drug store in no case carries a full range or assortment in these various unusual articles. In lines of this sort it is most likely that only merchandise of a distinctly convenience nature is carried. Of course, there has been some tendency for all sorts of establishments to move back toward the general store. Retail paint stores are selling goldfish and tire stores are selling radios. The drug store, however, because of the great numbers in which it is found and because of the rapidly growing consumer belief that any convenience article is to be found in a drug store is likely to take the lead in this trend.

There has been some tendency at the same time for the grocery distribution to become somewhat more concentrated into larger outlets and for a full line of

foodstuffs to be handled in a single market. For this reason it is barely conceivable that the drug store may presently become more distinctly a universal outlet for merchandise than the grocery store, and be found even in the smallest neighborhoods.

As the drug store becomes a more complicated and widespread type of outlet, the problem of contact with the drug store on the part of distributors and manufacturers likewise becomes more difficult. It begins to be necessary for the various distributors selling through the retail drug store to look upon themselves as an invisible partner of the druggist who must confer from time to time with regard to the future of this outlet. This development has already occurred in the grocery industry where the wholesale grocer, once almost the exclusive supplier of the retail store, now supplies only 30 to 35 per cent of the merchandise distributed by the retail grocer.

The interests of sound drug store merchandising undoubtedly demand a close working relationship between the various types of distributors to whom the retailer turns as sources of supply. A survey such as that proposed for the industry provides the essential basis for this coördination of effort. The druggist himself, as already stated, is most directly interested in the question whether the drug store will continue to be a sound profit-making enterprise. All factors who distribute through the drug store must, in turn, be interested in this question since the success of their own activities is dependent upon sound and successful retail outlets.

One of the main things to be determined with regard to this question is whether the principles of good management which mean profits in other lines of activity, can be made to apply to the drug store. If these principles require modifications to suit the conditions peculiar to this trade, the nature of those modifications must also be determined.

In the Louisville Grocery Survey we had a very clear indication of the close relation between profits and management. The successful stores were getting more sales per dollar of sales wages, more business per square foot of floor space and greater sales volume per dollar invested in merchandise. Managers of successful establishments were carrying a limited but well-selected list of items for sale, selling with a rapid turnover and with a fairly large volume per sales unit. Even though there was a decided difference in the profit-possibility presented by various classes of commodities, the poor store managers were failing to realize the possibilities of even the best commodity groups, while the good managers were showing a profit on commodities where the opportunity was much smaller, or at least making them pay their way.

It was found after the Louisville Grocery Survey, to be possible to definitely formulate the principles of good management for a retail grocery store. Many stores are being modified along the lines then indicated and are using methods of fact-finding and control which will enable them to keep their establishment up-to-date continuously.

A factor of secondary importance in determining the future of the retail drug store is its sources of supply. While the drug survey as presently conceived seems to call for an investigation chiefly of retail stores, a measure of attention will need to be given to the wholesale drug houses as a source of supply for the retailer. Retailers in the Louisville Grocery Survey were drawing their merchandise from

many types of wholesale establishments. Some were dealing with the regular old line wholesalers, while others were members of coöperative buying associations and still others belonged to voluntary chains. While no attempt was made to point out one type of supplier as the ideal grocery wholesaler, studies were made of 7 wholesale food dealers in Louisville and figures were presented showing the results obtained by these various types. Already it is possible to draw some interesting comparisons between these types of wholesalers. We can tell in a measure how successful the retailer has been in performing for himself services usually left to the wholesaler and which of these services seem to be really essential to the health of the trade.

We find, for example, one wholesaler who is able to provide wholesale groceries at a gross margin of 8 per cent. We are able to point out in what way this wholesale outlet differs from other wholesalers in the market still requiring a much larger margin, and to find out just how he has succeeded in reducing the overhead which his services require. The retailer would be justified in demanding that a study directed to improving retail management should at the same time give some attention to the efficiency of those who supply the retailer in order that he may be assured that he will be given an opportunity for continued earnings if he discharges his own function efficiently.

There has been a very sharp question among retail druggists in some parts of the country as to what proportion of the gross earnings of a business might be established as a proper share of the landlord in the success of the enterprise. In the City of St. Louis, where a great deal has already been done in investigating the problems of the retail druggist, a progressive step has already been taken in this matter of the cost of rent for a retail drug establishment. I have been told that on the basis of an average or standard rent figure determined through a survey, adjustments have been made in a number of individual cases which enabled the retail druggist to continue in business. Standards of cost for the various functions involved in the retail drug store might be established in a broader way on the basis of such a survey as that under discussion.

I will try to outline in the most general way what type of investigation would be necessary in order to get the results suggested. It seems to me that your committee has been on very solid ground in making the retail drug store and its operations the central point in this study. Before suggesting any policies or principles for retail druggists to follow, it is necessary to known in a much more detailed way than anyone knows at the present time just what occurs in a retail drug store. It is necessary to know what functions are performed by various employees, what portions of the day call most heavily on their efforts; how the typical customer behaves while in the store; and whether the various departments and pieces of equipment are so arranged to produce the maximum result from the behavior of customers and efforts of employees. We must know what volume of merchandise is being sold by the various departments of the store and what gross margin is being obtained on these commodity groups. If there are any special leaks or sources of waste in the drug store they must be discovered and measured. Each commodity group must be studied, not only as a group but in a detailed way for outstanding commodity items within each group. All the characteristics of these commodities which affect the problems of marketing them must be determined. The rate at which it sells,

the average size of sale, its perishability, attractiveness to the eye, must all be ticketed and measured as merchandising factors. The merchant must be led to abandon the point of view that he is running a drug store as too simple for present-day conditions. He must think of himself as being in the tobacco business, the candy business, the electrical goods business and other lines according to the range of commodities which he is handling. It should be possible to deduce from this detailed study of departments what are sound rules of merchandising to be applied to each commodity group. Each commodity group has its own peculiarities which may require some difference in treatment by the management.

In addition to studying all these things inside the store, a means must be devised for studying the community which surrounds it. In this community will be found explanations for many things which might at first seem surprising which are observed within the store itself. As a matter of fact, it would be impossible to say conclusively whether a druggist was doing a good job or not until it was known what kind of a community he was serving and what sort of merchandising it required.

Furthermore, it would not be possible to extend the findings of a drug store survey to other parts of the country unless it were possible to set forth specifically the market conditions prevailing in the city under survey, and as already described, it would be found essential to the complete picture to know many things about the wholesale distributors who were supplying merchandise to the dealer. Many specific problems will have to be determined as to the scope and character of a survey when the industry is ready to launch upon it definitely.

I have attempted to outline in only the broadest fashion what would seem to us to be the most fruitful approach as based on our experience with the Louisville Grocery Survey. Such a survey could scarcely fail to produce the same sort of practical benefits which are now being reported from Louisville and the food trade throughout the country with regard to the grocery investigation.

EDITOR'S NOTE: See Resolution No. 33, JOUR. A. PH. A., for May, page 526. Also brief reference to the Survey in this issue, and Minutes of the Section on Commercial Interests.

THE DRUGGIST? WELL, WHAT ABOUT HIM?*

BY ROBERT J. RUTH.

"The druggist is a poor business man." "He does not keep abreast of the times." "He lacks the progressive traits of men engaged in other callings." "He hasn't the push and ambition necessary to accomplish big things." How often we have all heard the above remarks. They are uttered by men, themselves druggists, who repeat them upon every possible occasion, otherwise we would not hear them so often. These men constitute a very small minority of retail druggists and the remarks that they make are perhaps applicable to only themselves, if at all. They could benefit by reading and following the advice given by Charles Dawes as published in the JOURNAL OF THE AMERICAN PHARMACEUTICAL ASSOCIATION and reprinted under the heading: "Charles Dawes' Creed—a Paraphrase," in

* Section on Commercial Interests, A. PH. A., Baltimore meeting, 1930.

the March 1930 issue of the *Pennsylvania Pharmacist* (page 4). Mr. Dawes says:

> "If you work in a profession, in Heaven's name work for it. If you live by a profession, live for it. Help advance your co-worker. Respect the great power that protects you, that surrounds you with the advantages of organization, and that makes it possible for you to achieve results. Speak well for it. Stand for it. Stand for its professional supremacy. If you must obstruct or decry those who strive to help, why—quit the profession. But as long as you are a part of a profession do not belittle it. If you do you are loosening the tendrils that hold you to it and with the first high wind that comes along you will be uprooted and blown away and probably you will never know why."

The writer is convinced that all of this talk and fault-finding about the druggist is unfounded, unjust and unfortunate. It is doubtful if any other class of business or professional men could pass through a transitory period which called for such radical changes and readjustment in their businesses and emerge as successful, clean and optimistic.

As recent as the waning years of the last century, when the writer was a small boy; even in the early years of the present century when he first started to work in a drug store, the pharmacist conducted his business in an entirely different manner than it is possible for him to conduct it to-day. Rentals were comparatively low, as were all other items of overhead. Chain store competition was unknown and while the cut-price practice did exist to a limited extent in some of the larger cities, it did not present the problem that it does to-day and did not exist for the druggist located in the small city or town. Pharmacy was practiced in a leisurely fashion. There was time to chat with patrons when they came to the store and with neighbors and friends when they just dropped in to visit and not to buy. Window displays and counter displays were not considered so tremendously important in any line of retail business as they are to-day.

As it was the ambition of most boys to work in a drug store, the druggist picked his apprentices with extreme care and he took a keen interest in their proper training. Consequently he secured valuable help at a small cost.

Then came the great magician who changed the entire picture. Just who he was cannot be determined. As time is not measured to-day by centuries but by millions of years, he came with blinding speed and he brought with him the new era of invention which has produced the automobile, radio, airplane, moving pictures, television, etc., he brought with him the Narcotic Act, the World War, Prohibition, the high cost of living, the Jazz Era, the post-bellum period of readjustment, the Income Tax, chain stores, cut-price wars, rackets and racketeers, gangsters and gunmen, crime waves and crime commissions, bootleggers, high-jackers, speak-easies, night clubs, theme songs, station announcements, press agents, Rudy Vallee, consolidations and mergers, the stock investment craze, the collapse of the market, "Amos 'n' Andy," the Peace Conference and many other media, laws, instruments, monstrosities and abominations for good or evil which have produced sorrow and joy, headaches and hysteria, multi-millionaires and paupers.

The druggist? Well, what about him? Don't worry. He has survived the dazzling era of "what next and what of it?" Here he is now. Yes, things are tough in the drug business, but he has a new suit on and he is driving a new car of

good make. He owns a nice home and has a summer place and the children are away at school. How lovely! Let's look at his drug store.

This is his store—the one with the modern front and the shining plate glass windows—the finest store in the block. See how well his windows are lighted. Look at the beautiful window displays. Let's go inside. Isn't it a handsome store? Modern fixtures, excellent merchandise, attractive counter displays. The store is splendidly lighted and immaculately clean and well arranged. Certainly different from the drug store of 1900.

How could he accomplish all of this if he is a poor business man? The answer is that he is a good business man. Of course, there are exceptions just as there are men in all businesses and professions who fail in one way or another to achieve success. But by far, the majority of druggists do keep abreast of the times. They do possess progressive traits. Who owns the most attractive, cleanest, best lighted, best serviced store? The druggist.

This transitory period has been a trying experience for him. His overhead has mounted tremendously. The rent has been increased each time that the lease has been renewed until it looks like the new census figures. Economic conditions have caused him to commercialize his store more than he should perhaps like to, but the public is partly to blame for this. It demands many things for its convenience and the pharmacist never loses sight of the fact that the public must be served. Nor has he permitted this commercialism to interfere with the splendid professional service which he continues to render in the interest of the public health.

The pharmacist of to-day has developed into an expert buyer of a multitudinous variety of merchandise. He is a past-master in the art of salesmanship. He is a credit man, an accomplished writer of advertising copy, a student of psychology, a philosopher, a staunch friend and a good citizen. He is an alert business and professional man, active in civic affairs, the neighborhood friend and counsellor. He deserves the public trust and he gets it.

When the Federal Narcotic Act was passed, the Government did not hesitate in deciding the question of who would be the legal custodian of drugs. Not only was the pharmacist best fitted because of his professional qualifications, but his moral responsibility was immediately given proper consideration. The best proof that the pharmacist has not betrayed the trust and confidence placed in him lies in the fact that the number of pharmacists prosecuted for violating the Federal Narcotic Act is so small as to be practically negligible when compared to the number of drug stores in the country and the great number of prosecutions of people not related to the profession. Even more cheering is the knowledge that of the small number of druggists prosecuted, the majority of them were accused of technical rather than criminal violation.

Again, when the Federal Prohibition Act was passed, the Government asked the pharmacist to be the legal custodian of alcoholic spirits for medicinal use. Unfortunately for the good name of Pharmacy, Prohibition opened up a lucrative avenue to many who were not pharmacists but who would prostitute the profession for ill-gotten gains. It is to be regretted that adequate laws do not exist to prevent them from embarking in the drug business as they have caused all pharmacists much embarrassment by furnishing a great deal of unfavorable publicity for Pharmacy in addition to creating a serious economic situation because of the multiplicity

of drug stores. Needless to say the reputable pharmacist derives little or no profit from the handling of narcotic drugs and alcoholic liquors for strictly medicinal purposes and that he handles them at all may be attributed to his desire to serve in the true spirit of his profession.

The introductory paragraphs of the report of the Commonwealth Fund Pharmacy Study (JOURNAL A. PH. A., Vol. XIV, November 1925, page 961) are applicable at this time:

"Pharmacy is an ancient and honorable profession. Its beginnings are lost in the mists of antiquity and its history is replete with substantial accomplishments. It is the mother of medicine and the original source of many forms of research. Numerous investigators who have made epochal contributions to science and art have been enrolled among the members of its followers. To-day pharmaceutical research is scholarly and productive. In the laboratories of two continents scientists are industriously and effectively studying the problems of the field.

"Yet, at the present time, the profession is undergoing a heavy barrage of criticism. The assertion has been made that it has been commercialized and has sunk to the level of soda-fountain dispensing and the rule-of-thumb shop keeping. Claims are made that it has become a purveyor of illegal drugs and liquors that keeps just within the boundaries between legality and crime. It is usurping the functions of the doctor by counter prescribing. It is said that it is pseudo-scientific without intelligent grasp of the sciences which it pretends to utilize. Some critics say that in the effort to commercialize the occupation, the ancient professional morale has been lost, with the result that the occupation has ceased to be a profession and is now become a trade.

"It is, therefore, of interest to examine this vocation which in numbers is not inconsiderable and in history is rich and worthy. To know with some definiteness just what the pharmacist does, what place he fills or may fill in society, how much he needs to know, and what sort of training should be given him in order that he may properly and intelligently fulfil his functions is a matter of major social importance. The criticisms just enumerated become immaterial if a picture can be drawn showing the full round of the responsibilities of the pharmacist and the amount, the depth and the extent of the training which is needed adequately to fit him to fulfil his obligations."

A picture is now being drawn, each year, which does show the amount, the depth and the extent of the training which is needed adequately to fit the pharmacist to fulfil his obligations. The picture is presented to the public during Pharmacy Week. That this effort is bringing about a fuller realization and deeper appreciation of the service of Pharmacy is borne out by the following editorial which appeared in the Newark (N. J.) *Sunday Call* and which was reprinted in the *American Journal of Pharmacy* (Vol. 102, March 1930, page 130):

"There is rightly the highest esteem and trust for the ancient and honorable calling of the apothecaries. Thus, when the modern brethren of these faithful servants of the public, the pharmacists, have the question put to them by some of their own guild, whether they are not going after strange gods in these days of business expansion, we listen with interest and respect. We appreciate the jealousy expressed regarding conserving the honorable traditions of the centuries, but confess at the same time inability to discern the dangers some learned pharmacists proclaim.

"The drug store—that is purely an American name which custom prevents us discarding—is an institution of this country, developed by ourselves, essentially democratic, and, aside from any business considerations, contributing importantly to public health and general welfare. The druggist is one of the few persons in the body civic that everyone believes and trusts. Around this faith has grown the atmosphere of a community personality which even the chain pharmacy has been unable to destroy. In neighborhoods away from commercial centers, the drug store not only has maintained but has extended its eminence as a personal and private possession of

each of its customers. Safeguarded by laws and regulations of their own advocacy, druggists occupy a position of minor priesthood and the faith is not misplaced.

"The introduction of such things as soda water, candies, restaurant service, books, cutlery, photographic supplies, tobacco, stationery, and things similarly far removed from medicine, is not alone the result of economic pressure. True it is that pharmacies would rapidly disappear if dependent upon prescription income alone and that many such important branches of the business are practically service at a loss, but it is also true that the institutional developments are the product of demands by the American people. When a drug store does something that the public does not like, it will hear from it quick enough. That is because every one tells his troubles to a druggist, who knows and keeps enough secrets to wreck a community's peace.

"A few years ago a movie was produced in which a great star failed simply because the scenario told of a druggist who sold bad securities to his customers. Not even the fact that he made full and honorable restitution saved the piece. The public didn't like it because it attacked one of its cherished faiths. We do not see any abatement in this popular confidence, though we honor those of the New Jersey profession who have voiced fears lest this regard be lessened."

The druggist? Well, what about him? "K. C. B.," the famous columnist, has this to say about him:

"So many times
I've had a thought
Of our neighborhood druggist
And I haven't done it.
And now it's Christmas
In a couple of days
And we ought to be kind
To everybody.
And I'm going to make this
A Christmas card
For neighborhood druggists
Everywhere.
And I'm going to say
That remembering back
As far as I can
To my youthful days
And coming on down
To my middle years
There's been no time
I can recall
When there hasn't been
A neighborhood druggist.
A man of patience
Who knew the trials
And the tribulations
Of every family
In his neighborhood.
And who advised
On everything
From an ailing pet
To postal rates
Or human ills
Or what was best
To remove grease spots
From this or that.
Or what would he do
For whatever it was
That no one else
Could be asked about.
A man of patience
Who worked all day
And every night.
Week days and Sundays.
And sold a stamp
Just as cheerfully
As he'd sell to you
Something left over
From the year before.
And why it is
That just to-day
I've again been thinking
Of neighborhood druggists
Is that our druggist
Who knows our secrets
And everything
Has sold his store
And is going away.
And another druggist
Has come among us.
And the neighborhood
Is all upset.
Though all of us know
It won't be long.
And the new come druggist
Will be one of us.
I thank you."

The AMERICAN PHARMACEUTICAL ASSOCIATION Meets in Miami in 1931.

"RECOMMENDED BY ALL RELIABLE DRUGGISTS."*

BY IVOR GRIFFITH.

To-day's issue of a tabloid newspaper carries a score of advertisements of patent medicines and flim-flammeries of all sorts. Some are the old reliables without which neither Tompkins Corner nor Broadway could get along.

The medicine for which babies carry on is, of course, featured, and so is the versatile corrective of halitosis and of the ubiquitous dandruff—local and express. The blue-bottle fly-away arch enemy of acid and itch is also in prominent place.

Equally seeable is the spot chosen to disport in style the valid virtues of the salve that soothes and settles every bruise and burn.

With these we have no quarrel. Their survival is evidence of their right to serve.

To subdue a hectic midnight soloist, crescendoing in colicy screams, who performs alone and successfully a veritable sextette from Lucifer—is an achievement worthy of note. They tell us that the medicine children cry for has been known to do this; if it be so, it is worthy of a place in the son—and in the medicine cabinet.

But such old-timers do not annoy us as we meet with them in the pages of our daily paper. Rather they make us somewhat thankful for the thought they bring, namely, that the will has not yet completely done away with the pill—and that science, neither Christian nor pagan, has deprived us of all our pleasant fallibilities.

No indeed! We have no quarrel with these homely home medicines. But we do get cross and dandery when advertising copy writers break out in a rash and newspaper owners permit their papers to run off on a spree.

To-day must be one of their spree days—and here is a true recital of the orgy of shame. Girth control motivates two of its broadcasting layouts.

"Lose weight where you most want to." That is the claim of one advertised product, and what a delicate sense of anatomic geography this slogan suggests. This is another ridiculous bit of copy:

"1930 Belles are not fat.—This great change (to modern slender styles) started when science discovered the chief cause of obesity—this factor was embodied in Hokum prescription tablets. People have used them for over 20 years—millions of boxes of them. That is one great reason for the slender figures you see everywhere to-day—simply take four tablets daily until weight comes down to normal."

"*Simply* take four tablets"—and the inspired copy-writer must have known that his copy was meant for simpletons.

A red-ray lamp is also pictured as the health-restorer par excellence.

"Entirely unlike the damaging ultraviolet or X-ray. Positively cannot burn or blister." Now this particular red-ray lamp emits the ordinary heat rays that an electric toaster—or a red-hot dish of macaroni emit—and to compare it with the ultraviolet lamp or the X-ray is about as reasonable as comparing soup with soap.

Yeast is good for the chest—the medicine chest. Once a chef—now a doctor—and with credentials from geheimrats and physicians-in-waiting-to queens and ten-spots, yeast leaves the kitchen for the medicine kit.

* Section on Practical Pharmacy and Dispensing, A. PH. A., Baltimore meeting, 1930.

A mouth wash graduates to halitotic eminences with one breath—and with another becomes an eradicator of stationary dandruff. No doubt its next achievement will be as a paralytic to the perpendicular proclivities of the non-stationary kind of dandruff.

The athletic foot vies with parrot-fever as a newly discovered advertising malady—and the fear that four out of five may have It, vanishes with an eagerness to check and double check "the film."

Elsewhere is spread the lying message of a new star on the hokum firmament—a panacea that challenges the medical dictionary to name any disease which it will fail to cure. The faces of low-priced and lower-principled (alleged) physicians adorn the copy. They testify to its marvels in words they never had the intelligence to voice or understand.

And people who run and read—read and run to the nearest shop to beg and buy a bottle.

Run and read—yes, but read on to the end—and note particularly the pharisaical phrase—"recommended by all reliable druggists."

There is the thing that irritates. The fat-reducing fraud—the hokum patent medicine—drugs and dregs, all have used this hackneyed, insulting and downright dishonest statement.

Elsewhere we find it part of the claim of a disreputable "restorer of vitality, vigor and vim."

Corn-removers, hair slickers, face-changers, intestinal lubricants, yeast from the West, greek-letter vitamins and alphabet soups, hair dyes, wrinkle chasers, candy laxatives, iron tonics, raw roughage and some more raw nonsense and flim-flammeries complete the group of articles which according to the daily paper are—

"Recommended by All Reliable Druggists."

That phrase is a calumny and an unwarranted insult to pharmacy. Reliable druggists do not recommend these good-for-nothing fakeries and fads. They know better. They know that the sole aim of such products is not the performance of a worth-while service, but rather a greedy attempt to separate fools from their moneys.

This is the age of hokum when credulity and ignorance still stalk the land with pride and puffing profits. Yet surely something could be done to prevent copy writers from taking such undue liberties with the good name of a profession which has long served the public usefully, intelligently and with a high sense of ethics and ideals.

EDITOR'S NOTE: For discussion of the paper see Minutes of the Section on Practical Pharmacy and Dispensing in this issue of the JOURNAL and Resolution No. 35—May JOUR. A. PH. A.

THE AMERICAN INSTITUTE OF PHARMACY.

All the divisions of the American Institute of Pharmacy should be and doubtless will be for service, for that is the life of the AMERICAN PHARMACEUTICAL ASSOCIATION.

THE DEPARTMENT OF THE AMERICAN ASSOCIATION OF COLLEGES OF PHARMACY

The curricula of our colleges of pharmacy are receiving careful study at this time, because we go to the four-year course in 1932. The following three papers by Deans Muldoon and Leigh and Professor Gathercoal discuss the place that three different subjects should occupy in our curricula and are therefore very timely.—C. B. JORDAN, *Editor*.

A COURSE IN DRUG ANALYSIS.

BY HUGH C. MULDOON.*

I. Shall the Course Be Given?—Is a knowledge of drug analysis of value to the pharmacist? Work of this character is specified in the suggested two-, and three-year courses outlined in the Pharmaceutical Syllabus. Those schools which do not now offer a separate course in drug analysis, give a considerable portion of the work in other courses.

The work is intrinsically valuable. It improves technique. The course provides a review of the work of other courses. It presents no unusual teaching problems.

II. When Shall the Course Be Given?—Since the work may utilize the student's knowledge of inorganic chemistry, qualitative analysis, organic chemistry, quantitative analysis, mathematics, biology, pharmacognosy and other courses, its proper place seems to be in the work of the last year. It is so placed in the Syllabus. What shall be its position in the four-year curriculum?

III. Shall the Work Be Given as a Separate Course?—The work of drug analysis is both qualitative and quantitative in character. Shall a considerable portion of the quantitative work of drug analysis be used as a means of teaching quantitative analysis, or shall this course follow a course in general quantitative analysis? The latter plan is effective. It will probably be followed in the university schools where the department of chemistry teaches quantitative analysis for the school of pharmacy. A similar plan works well when a course in general inorganic chemistry is followed by a course in the pharmaceutical applications of inorganic chemistry.

IV. Content and Time.—The selection of material for this course must depend upon the time available and the amount of analytical work that is to be given in other courses. Those schools which offer a separate course allow from three to six semester hours for this work. The Pharmaceutical Syllabus suggested 50 clock hours as a minimum under the two-year course. With the change to the three-year curriculum there was no increase in hours. What shall be the minimum number of hours to be devoted to a course in drug analysis under the four-year plan?

Material is not lacking. The United States Pharmacopœia and the National Formulary supply far more work than can be covered in the usual short course. This is true even when such exercises as alcohol determination; viscosity; melting, congealing and distilling points; and the detection and identification of alkaloids are included in the laboratory work of organic chemistry; when the arsenic tests, the tests for heavy metals, and the qualitative tests for the identity and purity of inorganic chemicals are performed in qualitative analysis; when the microscopic

* Duquesne University.

examination of drugs is studied in pharmacognosy; the determination of p_H values in bacteriology; sugar determinations in urine analysis; and gravimetric assays, and volumetric assays involving neutralization, precipitation and oxidation and reduction are studied in quantitative analysis.

With all these exercises disposed of, there is still a wealth of material, such as: iodine and saponification values; ester number; the chemical analysis of vegetable drugs; proximate alkaloidal assays; the examination of volatile oils, resins and waxes; turbidimetric tests; the determination of unsaponifiable matter; ash determinations; and gasometric, electrometric and biological assays; the use of the colorimeter, polarimeter and refractometer.

Much of this work will not be completed in a first course. Shall a second course be given, possibly as an elective in the fourth year? Such a course might well include the more difficult and unusual determinations; further work on the alkaloids; electrometric assays; the biological assays for cod liver oil, and for aconite, digitalis cannabis indica and the other drugs for which the Pharmacopœia directs biological assays; and other work of interest to the analytical and control chemist rather than to the retail pharmacist.

Should Work on Nostrums Be Included?—One school lists an elective course in the assay of nostrums. There is plenty of work to be done on official drugs and preparations. Shall trade-marked preparations be analyzed? Will a few such exercises be profitable? Would they give a special interest to the course?

The following questions are submitted:

1. *Is the work of drug assay worth while?*
2. *If it is, how much time shall be devoted to it?*
3. Shall the work be given as a separate course?
4. *Where shall such a course be placed in the curriculum?*
5. What shall be the general content of the course?
6. *Shall there be both an elementary and an advanced course?*
7. *Shall only official drugs and preparations be examined?*

THE PLACE OF PHYSIOLOGICAL CHEMISTRY IN THE FOUR-YEAR CURRICULUM.

BY T. R. LEIGH.*

About fifty per cent of the colleges in the Association, now offering the Bachelor of Science Degree in Pharmacy, require physiological chemistry, the amount varying all the way from 54 to 396 clock hours, seventy-two being the most common. This nearly equal division of opinion as to the advisability of having that subject a requirement for the degree is a cogent argument for its discussion. Since the majority of the chemicals and drugs commonly handled by the pharmacist and the prescriptions compounded by him are for the human body, physiological chemistry is beyond cavil an important branch of the science to him. A glance over the questions asked by the state Boards of Pharmacy will often disclose a leaning toward physiological chemistry. That a knowledge of this subject is valuable and desirable would hardly be denied by any one who has considered its relation to pharmacy. But there are many other subjects of prime importance, so many, in

* University of Florida.

fact, that all of them cannot be crowded into the curriculum. A cursory survey of the curricula of the colleges in the Association leads me to estimate that at least twenty years would be required to complete the various subjects required by the different colleges and leading to the Bachelor's Degree. Therefore, to say that any specific branch of learning, except those generally recognized as essential shall be required by all the colleges in the Association will generally arouse discussion or even argument. Personally, I believe that physiological chemistry is a very important subject to the pharmacist, especially to him who proposes to pursue the scientific side of the subject.

My ideal course, therefore, would include it in the four-year curriculum and let it come in the fourth year so that it would rest on a strong foundation of chemistry. I should like to give it as a so-called "separate" course, but in the teaching of it I should continually correlate it with its physiological and pharmaceutical relationships. The student is now ready for such a correlation for, strictly speaking, he is not a beginner. He understands the principles of several divisions of chemistry, he knows how to use advantageously journal articles, reviews and monographs. In the course of his physiological chemistry I should have him profit by much collateral reading. This reference study would not only broaden his knowledge of the fundamental principles, but would impress him with the developmental state of the subject. It would also help him to understand more clearly the chemical basis of immunology, and bacteriology. In short, he should soon realize and appreciate the coöperation of the bio-chemist with the pathologist, the pharmacologist and the physiologist in the revealing of the chemical phases of life. I believe that at least three semester hours could profitably be given to physiological chemistry without infringing upon the time of other desirable subjects.

I shall mention only a few things which the course might include to great advantage for I feel that a detailed account of its scope would be out of place to this audience: (1) A consideration of the composition and chemical properties of protoplasm based upon a thorough study in the class room and laboratory of the colloidal state; (2) a fair understanding of the constituents of living tissue; (3) the three main food stuffs—fats, carbohydrates and proteins, and the chemical processes that render them assimilatable and their products of hydrolysis including the influence of the saliva, the gastric and pancreatic juices and the small-intestinal secretions and the effect of the hydrogen-ion concentration; (4) digestion and the mechanism whereby the end-products of digestion pass through the walls of the intestines into the blood and lymph; (5) tissue formation and the production of energy; (6) blood and lymph; (7) metabolism, catabolism and oxidation changes, urine, etc.; (10) nutrition, including vitamins and mineral requirements; (11) animal calorimetry; (12) pathological conditions and the value of bio-chemical methods of diagnosis.

"PHARMACEUTICAL" BACTERIOLOGY.*

BY E. N. GATHERCOAL.[1]

Bacteriology as a technical science possesses a distinctive and marked pharmaceutical side:

* Read before the Materia Medica Teacher's Conference, Rapid City, S. Dakota, Aug. 26, 1929. [1] University of Illinois.

a The preparation and standardization of culture media involves so many pharmaceutical processes that it may be considered as almost purely pharmaceutical.

b The preparation and standardization of disinfectants and antiseptics is almost purely pharmaceutical. The application of sterilizing and disinfecting processes to pharmaceutical preparations is already extensive and should be much more widely applied.

c A general acquaintance with the fermentative and destructive insects, molds, yeasts and bacteria is common in the realms of agriculture, dairying, domestic science, public health service and many commercial lines involving the handling of perishable foodstuffs and similar materials. The pharmacist should be even better educated in this direction because he not only is responsible for much perishable material in which the need of asepsis and antisepsis is more important than with food material, but because he is the fountain head for the dissemination of general knowledge along these lines.

d From a more purely scientific and general educational side, the pharmacist should be informed upon the great physical and physiological rôles that bacteria and other minute organisms play in the constructive and destructive processes of nature.

e The life history of pathogenic organisms, their prevalence, usefulness and destructiveness to other life and the nature of the products of their metabolism, leading up to the theories of immunity and the production of toxins and other antigens and of antitoxins and other antibodies should be taught all pharmaceutical students. Complete instruction in the commercial production of all the biological sera, vaccines, antigens, etc., should be offered and the preservation of such biologicals and the proper manner of their distribution and sale should be deeply impressed.

f The actual culturing and laboratory study of *all* the pathogenic organisms and a knowledge of the disease processes they bring about is beyond the need of the pharmacist unless he is specializing for a biological or clinical laboratory. In such case the student needs a much broader foundation in physiology, pharmacology and pathology than the pharmaceutical student receives. A few of the more common pathogens should be included in the work mentioned in Paragraph *e*.

g The mastery of the theory and application of the great biological tests such as Schick, Opsonic Index, Wasserman, Tuberculin, etc., lies outside of the pharmaceutical curriculum. As in Paragraph *f* the specialist needs training along these lines. A few scattered pharmacists have become such specialists. A general knowledge of the theory of these tests should be given under the work mentioned in Paragraph *e*.

DIDACTIC AND LABORATORY INSTRUCTION.

No technical science can be properly taught to a body of students by didactic instruction alone. Pharmaceutical bacteriology cannot be properly taught by lectures and recitations from a text. Actual laboratory practice is essential. At least double, if not three or four times as many clock hours should be spent in the laboratory as in the lecture room. Perhaps this condition is even more essential in the teaching of pharmaceutical bacteriology than in that of medical bacteriology.

TEXTBOOKS.

A textbook of bacteriology suitable for pharmacy students has not been found until the work recently published by Gershenfeld of the Philadelphia College of Pharmacy and Science was received.

A study has been made of the bacteriology texts as they have appeared for the last 20 years. Jordan's General Bacteriology is very well written and Park and Williams Pathogenic Microörganisms is a really wonderful textbook. In both instances the personal experiences of the author are so evident in the text, that these texts are very readable and yet every statement bears the mark of authority. However, in both textbooks the medical side is greatly enhanced at the cost of the pharmaceutical. Gershenfeld's work is largely based on Park and Williams' text but does not contain the personal references and is poorly illustrated. It does, however, emphasize the pharmaceutical side beyond the medical and hence is valuable in the pharmaceutical school.

The bacteriology texts by Jordan, Novy, Park and Williams, Conn, Marshall, Giltner, etc., and the classification by Bergey should all be available to the student.

SYLLABI OF DIDACTIC AND LABORATORY INSTRUCTION.

A mimeographed syllabus of the lecture and recitation course as given at the University of Illinois School of Pharmacy in fifty clock hours (one semester) is presented.

You will note that there are four distinct divisions, *viz.:*

I. Sterilization, Disinfection, Pasteurization and Antisepsis; II. The Physical and Chemical Characters of Bacteria, Their Habitat and Place in Nature, Their Physiological Characteristics and Metabolic Products; III. The Theories and Processes of Immunity, the Biological Tests and the Preparation, Preservation and Use of Bacteriological Sera, Vaccines and Antigens; IV. The Pathogens Among Bacteria, Yeasts, Molds and Protozoa.

A similar syllabus of the laboratory work given in 150 clock hours (one semester) also indicates four distinct divisions, *viz.:*—I. The Preparation of Culture Media; II. The Isolation and Identification of a Bacterium; III. The Culturing, Mounting and Study of about 30 Different Organisms, Including Pathogens on Special Media, Anaerobes, etc.; IV. Practical Laboratory Processes such as the Phenol Coefficient Valuation of Disinfectants, the Bacteriological Count of Water, Milk and Other Materials by Various Methods, the Differential Characteristics of the Members of the Colon-Typhoid Group, etc. Each student or pair of students chooses one type of work and gives the whole month to it, thus perfecting his technic until he is able to get concordant results and acquire confidence in his own ability.

Our Laboratory Outlines are very explicit in the working directions for each operation, but oral instruction is given when necessary in the laboratory. Assistant Instructors give constant personal instruction.

It is to be noted that the didactic and laboratory courses are not concordant in their content though given simultaneously, yet they do supplement each other very fully. Little is said in the lecture work about culture media, stains and staining methods, laboratory technic, etc.

Please note also that each division in each course covers approximately a month and at the end of each month's work a written examination is given on the work accomplished during the month. The eight ratings averaged give the student's grade for the course, unless the student because of low grades desires to take a final examination.

SYLLABUS OF THE LECTURE COURSE IN BACTERIOLOGY.[1]

50 CLOCK HOURS.

I. Sterilization, Disinfection, Pasteurization, Antisepsis (12 hours)

By means of heat

Direct burning, oven heat, boiling water, steam under pressure, "live" steam, heat less than steam

By means of chemicals

Halogens and other oxidizers
Heavy metals, phenols, alcohols and other coagulators
Cresols, aldehydes and non-coagulators
Acids, alkalies, salts, cyanides, sulphites, etc.

By means of filtration

Clay bougies, cotton or glass wool (air filters) and sand

By means of cleansing

By means of light

Sunlight, ultraviolet, etc.

By means of cold

Freezing, refrigeration, cooling

By other means

Practical applications in surgery, rooms, buildings, ships, other conveyances, books, water, milk, foods, apparatus, pharmaceuticals, surgical supplies, etc.

II. General Morphology and Physiology (12 hours)

Habitat and natural classification
Size, shape, structure, motility, growth, reproduction, spore formation
Chemical composition
Feeding and temperature requirements
Influence of chemicals, light, radium, electricity, pressure, osmosis, desiccation, etc.
The nitrogen cycle
Fermentation and enzymes
Production of pigment, light, heat
Poisonous products of decomposition

III. Infection and Immunity (12 hours)

Disease: causes and results
Parasitic microörganisms
Infection: kinds, means of transmission, essential conditions, virulence, susceptibility, routes, types and effects
Defenses against infection
Immunity: natural, acquired, active, passive
Antigens and antibodies: antitoxic, anti-protein, anti-microbial
Allergy, anaphylaxis, etc.
The biologic tests for susceptibility to diphtheria, scarlet fever, typhoid fever, syphilis, tuberculosis, pollen and protein extracts, etc.
Hormones and vitamins

IV. The Pathogens (12 hours)

Staphylococci, streptococci, pneumococcus, gonococcus, meningococcus
The colon-typhoid group
The influenza and black plague groups
The spore-bearing anaerobes
Organisms of diphtheria and tuberculosis
The yeast and molds; the protozoa

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[1] University of Illinois School of Pharmacy.

SYLLABUS OF THE LABORATORY COURSE IN BACTERIOLOGY.

150 CLOCK HOURS IN ONE SEMESTER.

I. The Preparation of Culture Media (36 hours)

Cleaning of glassware
Stoppering of culture tubes and flasks
Sterilization of glassware
Preparation of culture media
Tubing and sterilization of culture media
Labelling and preservation of culture media
First Rating: Each student is to present for inspection and rating 10 tubes of broth, 10 tubes of gelatin, 50 tubes of agar (40 slated), 10 tubes of potato, 5 tubes of litmus milk, 5 fermentation tubes of dextrose broth, 5 fermentation tubes of lactose broth, 5 tubes of Dunham's peptone solution and 5 tubes of nitrate peptone solution

II. The Isolation and Identification of a Bacterium (36 hours)

Cleaning slides and cover glasses
Preparation and use of platinum needles
Obtaining material for study
Preparation of plate cultures
Incubation of cultures
Preparation of staining solutions
Study of plate cultures
Preparation of tube cultures and their study
Cover-glass preparations
Use of the microscope, drawing bacteria
Testing cultures for indol, nitrites, ammonia, acids, gas formations, etc.
Study of type forms of bacteria; motility, flagella, endospores, capsules, Gram's stain, etc.
Second Rating: Present for inspection and rating one species in gelatin and agar plate cultures, gelatin stab, agar slant, potato, broth and litmus milk cultures, and mounts showing the ordinary stain, Gram's stain, any special stains, spore formation and flagella if present. Also include fermentation tubes and cultures for applying indol and nitrite tests, if these are positive for your organism. Drawing and notes indicating the steps in the identification are to accompany the cultures and mounts.

III. Pure Cultures

About 60 organisms in pure culture are made available to the class, partly those isolated by members of the class and partly furnished by the teacher. Among these are staphylococci, streptocci, spirilla, about 10 members of the colon-typhoid group, "butter milk" bacteria, sporeformers, anaerobes, the organisms of pneumonia, diptheria and tuberculosis, yeasts and molds, etc.
Third Rating: Twenty-five organisms in pure culture, accompanied by stained mounts and descriptions and drawings of each will be presented for inspection and rating. Those organisms in the list marked by a star are required. Use the printed blanks for your descriptions and drawings.

IV. Practical Laboratory Processes (36 or more hours; only one subject is undertaken by each student or pair of students, but perfection in technic until concordant results are obtained is required)

Phenol coefficient of disinfectants
(Several different methods are used on commercial disinfectants)
Bacterial count of milk and water
(3 or 4 different methods are employed and commercial bottled milks and waters are tested)
Differentiation of the members of the colon-typhoid group
(Several special media are prepared and used)

AN EDUCATIONAL STUDY OF STUDENT NURSES IN PHARMACY.*

BY LOULA E. KENNEDY, R.N., JOHN C. KRANTZ, JR., PH.D., AND J. CAREY TAYLOR, EDUC.D.

INTRODUCTION.

We are living in the era of statistical studies, success prediction and vocational aptitude in elementary and secondary school education. Educational measurements have also invaded the field of higher education and their applicability to the field of professional education will undoubtedly be forthcoming in a broader way than is extant at the present time.

In pharmaceutical education some work has been done as far as educational measurements are concerned. At the Des Moines meeting (1) of the American Association of Colleges of Pharmacy, one of the principal addresses was delivered by Dean Seashore on "Aptitude Examinations for College Students." However, these were not directly applicable to pharmacy. McGill (2) pointed out the importance of intelligence tests in pharmacy schools in interpreting the pharmaceutical success of the students.

In the Johns Hopkins Training School for Nurses, two of the present authors have conducted a course in pharmacy for a period of six or seven years. As these student nurses are all high school graduates, and in many instances hold bachelor's degrees from recognized colleges, it was thought that these student nurses would be excellent test subjects to study the relationship between college education and the prediction of success in pharmacy. Furthermore, the correlation between the intelligence quotient and success in pharmacy was thought to be of sufficient interest to warrant our study. With these purposes in mind, this investigation was begun.

THE NATURE OF THE COURSE.

The course in pharmacy includes ten lectures and five laboratory periods, given during the probation period of the student nurses' training. The subjects included in the curriculum are, in a general way, pharmacopœias, weights and measures, natural products, more generally used galenicals, endocrine products and the general methods of standardization. In the laboratory course, the students prepare ten very generally used galenical preparations.

PHARMACY AND GENERAL INTELLIGENCE.

In the group studied there were fifty-six student nurses who were each required to take an Otis Self-Administering Test and also a Kuhlmann-Anderson Intelligence Test. The average of the intelligence quotients obtained from these two tests is considered as a fair measure of the intelligence quotient of the student. The results obtained by these students showed that their intelligence quotient was on an average, a little above the normal, and when these data were correlated with the grades in pharmacy, a very high correlation was obtained. The following data indicate the correlation coefficient between the grades in pharmacy and the intelligence quotient calculated by the usual correlation coefficient formula. The general formula:

* Section on Education and Legislation, A. PH. A., Baltimore meeting, 1930.

$$r = \frac{S(xy)}{\sqrt{S(x^2) \cdot S(y^2)}}$$

was employed. X is equal to the deviation from the mean in intelligence and y is equal to the deviation from the mean in pharmacy. In this case the r was equal to 0.914, with a probable error calculated by the formula:

$$P.E. = \frac{(0.6745 \times 1 - r^2)}{\sqrt{N}} = 0.014$$

Interpreting this correlation coefficient in terms of prediction of success, a correlation coefficient of 0.91 is equivalent to a certainty of about 57 per cent; that is to say, if the intelligence quotient of a student is high, the accuracy of prediction of success in pharmacy is increased by about 57 per cent (4) over sheer guessing on chance.

RELIABILITY OF EXAMINATION.

The following examination was given in pharmacy as a means of evaluating the students' ability in this subject:

1. Name and define five classes of galenical preparations intended for internal administration.
2. What are the principal constituents [illegible]ng preparations: (*a*) tincture of iron, (*b*) paregoric, (*c*) Seidlitz powder, (*d*) laudanam, (*e*) infusion of digitalis?
3. How are ointments classified accor[illegible] to use? Name the two types of suppository bases.
4. In what forms is epinephrine available for use? What is the therapeutic principle involved in the use of epinephrine in insulin shock?
5. Define standardization and assay. Tell in detail how anyone of the following products are assayed: (1) digitalis, (2) ovarian hormone preparations, (3) insulin, (4) posterior lobe pituitary preparations.

The reliability of this examination as an accurate measure of the ability of the student in pharmacy was determined by calculating the correlation coefficient between the grades obtained on Questions 1, 3 and 5 and those obtained on Questions 2 and 4. The correlation coefficient between these data correlated by the foregoing formula was 0.76 with a probable error of 0.056. In the calculation of the reliability coefficient of an examination, the correlation coefficient is stepped up by the so-called "Spearman prophecy formula" which is

$$r_n = \frac{nr}{1 + (n - 1)r}$$

where n is the number of groups of data correlated and r is the correlation coefficient. The reliability of the examination by means of this formula is stepped up to 0.856. This reliability quotient is considered moderately high and indicates that the examination is a valid measurement of the students' ability in pharmacy.

CORRELATION BETWEEN PHARMACY AND CHEMISTRY.

It was thought desirable to determine whether or not there was a high correlation between success in pharmacy and success in chemistry among these same

student nurses. The course in chemistry is somewhat more intensive than the course in pharmacy, and includes twenty-five lecture hours, and ten laboratory periods. Yet the correlation coefficient between these data was not as close as one might *a priori* expect. By the above formula, the correlation coefficient between the pharmacy and chemistry grades was 0.676 with a probable error of 0.072.

INFLUENCE OF PREVIOUS EDUCATION.

The previous education of the student was ascertained, and the students were divided into three groups: those having only a high school education, those having one or two years of college work, and those having three or four years of college work. The following data are obtained from these groupings.

No. of Students.	Training.	Average in Pharmacy.	Average I. Q.	Ratio.
25	H. S.	73.8	102.6	0.720
12	1 or 2 yrs. Col.	72.0	103.0	0.700
19	3 or 4 yrs. Col.	82.0	113.0	0.725

An examination of this table indicates that those students who had the greatest amount of college training obtained the highest scores in the intelligence examinations, and also the highest scores in pharmacy; yet we find that one or two years in college seems to have almost no influence upon the grade in pharmacy. It is especially interesting to note that irrespective of the previous training, the ratio between the grade in pharmacy and the intelligence quotient is constant. This seems to indicate that the intelligence quotient is a better means of predicting success in pharmacy than the previous training the student has had.

CONCLUSIONS.

1. The correlation between the grades in pharmacy and chemistry is fair.
2. The correlation between intelligence quotients and the grades in pharmacy is high, and the intelligence quotient may be looked upon as a means of predicting success in pharmacy among student nurses.
3. Students with only high school training and a high intelligence quotient scored high in pharmacy. Students with college training and low intelligence quotients scored low in pharmacy.
4. The ratio between the grade in pharmacy and the intelligence quotient is constant irrespective of previous training.

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(2) W. J. McGill, JOUR. A. PH. A., 12 (1923), 165.

(3) R. A. Fisher, "Statistical Methods for Research Workers," Oliver and Boyd, London, 1928, page 149.

(4) G. M. Ruch, "The Improvement of the Written Examination," Scott, Foresman and Co., Chicago, 1924, page 143.

ABSTRACT OF DISCUSSION.

Dean Jordan requested Dr. Krantz to explain why the college student had no higher I. Q. than the high school graduate.

The author replied that the college students referred to had only one or two years of college; those who had three or four years of college rated higher in the intelligence quotient.

A. B. Lemon stated that in the University of Buffalo endeavor is made to connect the results of placement tests with actual accomplishments, however, the ratio failed to be of great value in showing what a student would do in the courses; there is a predicative value in the relationship of the first year's work and that of the succeeding years. He stated that students coming from rural high schools were not as well prepared as those from city high schools. Factors of importance are to be derived from the work of students outside of the college in drug stores, the desire of students to go to college, home environment, etc. Studies are being made over a 5-year period, from which it is hoped to derive valuable data.

Dean Jordan referred to what had been termed orientation tests—if a student standing high in average and is deficient in one or more subjects the reason is sought; students rating low in all branches are advised to discontinue their studies, thereby saving time and money for them.

JOHNS HOPKINS TRAINING SCHOOL FOR NURSES,
BALTIMORE, MARYLAND.

THE LIMITED CONTENT OF THE PRESENT PHARMACEUTICAL CURRICULA.*

BY WORTLEY F. RUDD.

My only apology for a line on this hackneyed subject is a profound concern for pharmacy of the future unless there is a radical change in the educational ideals of some of our schools of pharmacy.

I believed—and many others did too—that when the change from a two-year to a three-year course was made, the main purpose was to give opportunity for the liberalization of the curriculum. In many schools advantage was taken of this and the three-year course is with them as well balanced, as good a combination of culture, theory and practice of pharmacy and fundamental science as is possible in the time available. Some schools, however, have simply enlarged the two years to three in pharmacy, chemistry and materia medica. Not a semblance of liberalization! Personally, I deprecate such a state of affairs. When both medicine and dentistry have established standards which make certain cultural and scientific subjects obligatory upon those who would follow these professions, we are both surprised and distressed when we note the unwillingness of pharmacy to accept as natural and necessary a similar procedure.

With such a state of affairs in mind, I venture to suggest that the Section on Education and Legislation recommend to the resolutions committee of the parent organization the following:

> WHEREAS, high school and college education is now the accepted privilege of rapidly increasing numbers of our population, and
>
> WHEREAS, this places upon those in any of the professions having contact with the public an added responsibility for the maintenance of the dignity and good name of members of these professions, and
>
> WHEREAS, pharmacists contact the public more frequently than any other single professional group,
>
> *Therefore, Be It Resolved:*
>
> *First,* that it is the sense of the Section on Education and Legislation that pharmaceutical education should take cognizance of these facts.
>
> *Second,* that as rapidly as possible the curricula of our schools of pharmacy be liberalized so that their graduates may not be handicapped in their contacts with this ever-increasing number of liberally educated men and women.

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* Section on Education and Legislation, A. PH. A., Baltimore meeting, 1930.

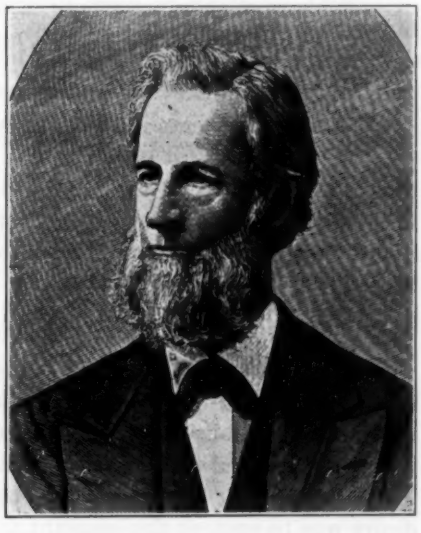
D. B. R. Johnson said that the paper was a splendid one; liberal arts subjects find place in a three-year course, but cultural subjects should be left for the four-year course. He moved that, as requested, the paper be referred to the Committee on Resolutions. The motion was seconded and carried.

See also Chairman Jenkins' address, in this issue of the JOURNAL.

GEORGE THORNDIKE ANGELL, THE FEARLESS PIONEER FOR PURE FOODS, DRUGS AND THE FRIEND OF THOSE WHO COULD NOT SPEAK FOR THEMSELVES.*

BY L. F. KEBLER.[1]

During my delvings into the history of Federal Food and Drug Legislation I read with very great interest about the fearless manner, tenacity and persistence with which this man attacked the debasement of human necessities. Last year while on the way to Portland meeting of the AMERICAN PHARMACEUTICAL ASSOCIATION, on looking across the street from the Massachusetts College of Pharmacy, I read the inscription "Angell Memorial Animal Hospital." I wondered if this was the same man that crusaded for the health of humanity some 50 years ago, and found that it was the same Angell and one of the great worthies of Boston. Now, who is this pioneer?



GEORGE T. ANGELL.

BRIEF SUMMARY OF ANGELL'S LIFE.

George T. Angell was born at Southbridge, Mass., June 5, 1823, and answered the last call March 16, 1909. His father, George Angell, was a Baptist clergyman, and departed this life before his only child was 4 years old. The boy's mother, Rebekah Thorndike, was the youngest daughter of Lieut. Paul Thorndike. She taught private school at Worcester, Massachusetts at the time of her marriage. The little property she brought to her husband was lost by a man whom they trusted. The father left little property at his death. The mother was again compelled to teach school.

The orphan boy was brought up by relatives, friends and others. His mother had him fitted for college in an academy, at Meriden, N. H. He entered Brown University in 1842, remained there one year and then, on account of the expense, transferred to Dartmouth college, graduating July 30, 1846, with an indebtedness of several hundred dollars to a wealthy relative. A month later he started out with his mother's blessing and a little money to seek his fortune. Of his mother he said, "No man ever had a better mother."

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* Section on Historical Pharmacy, A. PH. A., Rapid City meeting, 1929.

[1] Former Chief of Drug Division, Bureau of Chemistry, U. S. Department of Agriculture.

The young man had some wealthy and influential relatives but preferred to paddle his own canoe rather than ask their assistance. On his way to Boston he stopped at several places to get work, without success. On arriving at Boston a good uncle, without solicitation, offered him a place in his office. Later he obtained a teaching position, and for three years taught school daytimes and studied law nights and vacations. During this time he paid his college debt, supported his mother and accumulated about $1200. The next two years were spent in the law office of one of the most eminent lawyers and counsellors of Boston and Harvard Law school.

During the latter part of 1851 he was admitted to the bar of the Supreme Court of Massachusetts. Immediately thereafter he entered into a pleasant and successful partnership. His income was sufficient to support his mother, furnish her with everything she desired, himself lived comfortably, gave something to charity and accumulated money much beyond any previous anticipations.

After 25 years of legal practice he abandoned his profession and devoted himself to works of public welfare. Angell's immortality rests on his work against the cruelty to animals. In 1872 he married Mrs. Eliza Martin and "thereby secured a good wife and happy home to help in future labors."

The environments in which he was born, reared, educated, lived and practiced, provided verdant soil in which the seed of humanitarianism would grow. They developed the forceful character which stood him so well in hand when he found it necessary to combat the two hardest of all things, an ignorant public and an indifferent Congress. Neither could see the altruistic motive of Mr. Angell in benefiting his fellow man.

CRIME AGAINST PUBLIC HEALTH, 1877.

Angell's attention had for some time past been called to the adulteration of foods, drinks, drugs, poisonous clothing, ornaments, wall paper and culinary ware sold in Massachusetts without restriction. As an attorney and humanitarian it was but natural that he should early advocate town, municipal, state and federal legislation which would provide for the inspection of these commodities. His desire was to protect the ignorant public against the purchase and use of poisonous and adulterated articles, with which the market was filled by clever manufacturers.

Marbleized Iron Ware.—Dr. Hayes, state chemist, called his attention to the poisonous nature of a beautifully mottled new cooking ware. It was loaded with large amounts of soluble lead. The ware found its way into homes, restaurants and hospitals. Something like a hundred thousand dollars worth was on the market. Angell clearly considered it his duty to inform the public. The story was told in the press. The effects were wonderful. The ware became as dead as a door nail. The manufacturers pronounced Angell's statements false and threatened suit for something like a hundred thousand dollars. But a few days later a Harvard chemist came to his rescue and pronounced the ware "alive with poison." This settled the affair. The alleged harmless marbleized ware was taken from the market, at a tremendous monetary loss. The manufacturer was apparently innocent. A chemist seems to have blundered. One unfortunate consequence of this exposure was that the sale of a harmless "Granite Iron ware," resembling the poisonous imitation suffered for the time being.

Poisonous Wall Papers.—About three weeks after the marbleized iron episode, he likewise called attention to the poisonous nature of a large variety of colored wall papers, and urged the formation of a "Public Health Association."

SENTIMENT FOR PURE FOODS AND DRUGS DEVELOPING.

The American Grocer for 1869 contained a drastic editorial on the debasement of foods and drugs. The California legislature in 1872 passed the first general food and drug law in the United States. The Western Wholesale Drug Association, from its inception in 1876, hammered away at the adulteration of foods, drugs, chemicals and other commodities. The association condemned the practice. At the 1877 meeting C. F. G. Meyer, one of the great worthies of the pharmaceutical profession, attacked the evil with hammer and tongs. Much more along the same line could be said for this association.

The United States Congress in 1878 made it a misdemeanor for the druggists of the District of Columbia to adulterate their wares. The above and much more could be cited as an immediate background for the activities of Angell.

THE YELLOW FEVER EPIDEMIC OF 1878.

In February of this year, Mr. Angell met Honorable H. Casey Young, member of the U. S. Congress from Memphis, Tenn., one of the heroes who remained in Memphis to help take care of the yellow fever sick and dying the following summer. This contact later enabled Angell to bring to the Congressman's attention the adulteration of foods and poisonous articles on the market.

The same year Angell attended the annual meeting of the American Public Health Association at Richmond, Va. One purpose of attending this meeting was to get action on dangerous and poisonous adulterations. In this he failed because the entire country was greatly alarmed over the spread of yellow fever. It was the dominant topic of the day.

WAR ON ADULTERATIONS, 1879.

On January 8th, of this year, Angell read a paper entitled "Public Health Associations," before the annual meeting of the American Social Science Association. It contained most startling adulteration information. The author intended it to be sensational. His aim was to bring on a war of discussion which would awaken the nation. Large amounts of capital were involved. He expected to be attacked and abused. The paper was published in most of the Boston daily papers. The author sent printed copies to many newspapers and awaited the storm. The battle for which he had been preparing for several years was on. It meant "Some of the hardest work in my life," says Angell. He had enough material to fill a large volume. A Boston chemist and others launched attacks. Thereafter for ten days the *Boston Herald* carried Angell's stories about poisonous and adulterated products. No Boston paper ever attacked him. On the contrary they published his addresses at great length. A leading East-Boston paper devoted eleven and one-half columns to the printing of one of his anti-adulteration addresses. On January 20, 1879, representative H. W. Wright of Pennsylvania introduced the first pure food bill into the United States Congress entitled "A Bill for Preventing

the Adulteration of Articles, of Food and Drink." This bill will be considered in a separate article. One trade paper declared that Angell had attacked every trade in Boston. Angell replied that he had attacked the rascals only.

A public meeting was called in Fanueil Hall to denounce his charges. Angell offered $25 for the privilege of addressing the gathering. He paid his own way, asked no quarters and gave none.

On March 3, 1879, the United States Congress authorized the organization of a "National Board of Health."

At the regular quarterly March meeting of the United States Board of Trade the Committee to whom was referred the question of the power of the United States Congress to legislate upon the subject of food and drug adulteration, reported that Congress, under the Constitution was empowered "to regulate commerce between the States," can enact all needful legislation and that state legislation alone cannot adequately deal with the problem.

Representative R. L. T. Beale of Virginia introduced the second food adulteration bill, May 23, 1879, entitled "A Bill to Provide for the Welfare of the People in Preventing the Adulteration of Food and Drink." This bill will be considered in a separate article.

An antagonistic trade paper compared him (Angell) with an old clock which, once wound up, would never stop striking. Angell liked the simile and prepared to strike again and he certainly did strike. He prepared with great pains another and longer paper than the first one. This he read before the national meeting of the American Social Science Association, September 10, 1879, where it would be widely reported, unless suppressed by some trick. I may say that the association never published any of Angell's adulteration addresses in its journals. Angell apparently profited by experience. He had his address set up in type in advance and sent slips to the leading papers of the country. The next day Angell found that the Associated Press agent was arranged with not to report the paper. The agent said later that he had been deceived by a New Yorker who pronounced Angell's adulteration statements false. Before the meeting closed, however, newspapers containing the address were being circulated. This upset the New Yorker's calculations who exclaimed, "Now the d--- thing would travel all over the country." He was about right; it did travel rather widely in the public press.

ANGELL'S DETERMINATION MAKES AN IMPRESSION.

As the result of the adulteration agitation the National Board of Trade at its annual meeting in Washington adopted a resolution offering $1000 in three prizes for a draft of a "Food Adulteration Act." The preamble of the resolution reads in part as follows:

> "Whereas the Public mind has of late been considerably agitated about the alleged adulteration of food, and whereas the question of pure and wholesome food and drink is one of great importance to the people of the United States."

The National Board of Health's report (1879) on Adulteration contained Dr. E. R. Squibb's draft of a proposed law for the states to control the adulteration of foods and medicines.

"THE BATTLE WITH THE CHEMISTS AT SARATOGA" 1880.

Public attention had been attracted to adulteration; the press was publishing much on the subject; Angell was called on to give information and write articles; adulteration interests involving millions were aroused, and chemists from various parts of the country were to gather at the next annual meeting of the American Social Science Association, to refute Angell's charges. So he quietly packed his trunk with the adulteration evidence, went to a quiet spot in the mountains and got ready for the fray. He determined to spread the facts he had gathered before the people, if it took five years. The battle came on September 8th. The chemists put in their evidence, which was in substance that there was little dangerous adulteration. Angell was a director of the association and therefore had the privilege of both opening and closing the discussion. He appeared to have overwhelming evidence from chemists, microscopists and health offices. The chemists apparently were no match for this seasoned, worthy, experienced protagonist in this contest. Angell made a number of propositions to the chemists but none were accepted.

SPENDS WINTER IN WASHINGTON TO BRING ADULTERATION BEFORE CONGRESS.

Angell found many obstacles and plenty of hard work after his arrival in Washington. A letter he had written President Hayes was sent to the National Board of Health and found its way into the hands of the New Yorker who had manipulated the Associated Press to suppress one of his papers. A lobbyist was put to work. The Washington papers gave him no aid. An officer of the National Board of Health assured him that if he (Angell) expected to do anything in Washington by way of stopping adulteration, he was mistaken and a prominent lawyer told him that considering the political influence and vast capital involved, the job was as hopeless as storming the Rock of Gibraltar. Congressmen received circulars warning them to have nothing to do with him. By dint of constant pertinacious aggressiveness, he succeeded in having a hearing appointed, but not enough members put in an appearance to make a quorum and nothing could be done. At the end of 1880 he had made no visible progress in Washington. Many were sympathetic with the work but no Congressman "was willing to do battle against the great political and finance power of adulteration."

While it may be true that Angell saw no tangible results at that time, it is clearly evident that the indifference and opposition were weakening.

PRIZES ON "FOOD ADULTERATION ACT" ESSAYS AWARDED.

This is not the place to discuss this subject in detail. The first prize of $500 was awarded the latter part of this year to G. W. Wigner of England. His essay provided drafts of proposed Federal and State Laws, plans of enforcement, enforcing bodies, standards, penalties, etc.

The report of the committee on awards embodies a draft of a proposed Food and Drug law adapted to the United States, based on Dr. Wigner's essay, together with a memorial to Congress transmitting the bill and requesting its early enactment. Nothing came of this bill.

THE COMMITTEE ON EPIDEMIC DISEASES BOMB-PROOF, 1881.

Hon. Casey Young, chairman of this committee, and Angell were on very pleasant terms. The committee was composed largely of southern representatives, who were not afraid of the political influence of the New York lobbyists. Angell went to Representative Young and laid the whole matter before him. His antagonists never suspected Angell of bringing the adulteration matter before the committee on yellow fever. Casey Young was sympathetic and declared that Congress and the country should have, through a report of his committee, the evidence Angell desired to submit. At the request of the Representative, Angell drew up the following petition:

"PETITION TO CONGRESS.

"To the Honorable Senate and House of Representatives of the United States of America in Congress assembled:

"The petition of George T. Angell of Boston, in the State of Massachusetts, counsellor-at-law, respectfully represents, That, during the past five years, he has devoted much time to the careful investigation of the manufacture and sale of poisonous and adulterated foods, and other poisonous and dangerously adulterated articles, in American markets, and has gathered a very large amount of evidence showing such manufacture and sale; that he has, at different times, read three papers upon this subject before the American Social Science Association, of which he is a director, at its annual meetings, and more recently a fourth paper before the Boston Board of Trade, receiving a unanimous vote of thanks from that body; that he is fully prepared to prove that there is, at the present time, an enormous sale, in our markets, of articles poisonously and dangerously adulterated, endangering the lives and health of large numbers of the American people. Wherefore, he prays that a Congressional committee, or commission, may be appointed to carefully investigate, consider and report on this subject.

Geo. T. Angell.

Washington, Jan. 22, 1881."

ANGELL'S MISSION IN WASHINGTON ON SOLID FOUNDATION.

On January 24th, the Congressman from Tennessee, introduced the petition in the House of Representatives and had it referred to his committee. Down came the lobbyist from New York who had tried to suppress Angell's paper at Saratoga. There was plenty of wire-pulling but the committee was bomb-proof. Angell appeared before the committee January 27th and 28th and February 3rd, at which time the committee reported in favor of a bill prepared by Mr. Young appointing a commission, and appropriating $20,000 to study the question of adulteration. The next day, February 4th, Casey Young presented the report, Number 199, 46th Congress, 3rd Session, entitled "Adulteration of Food," from the committee, in the House, with about 100 pages of Angell's manuscript attached, which was accepted, referred to the House Calendar and ordered printed. The report accompanying H. R. bill 7005, consists of 19 printed pages of exceedingly well-digested and compiled information on the debasements of human necessities.

The introduction to report of committee is printed in the preceding article on page 596 of the June JOURNAL.

CONGRESSIONAL REPORT ON ADULTERATION CIRCULATED.

Congress printed about a thousand copies. Angell at his own expense printed five thousand more and made arrangements for the distribution of 100,000 copies of the greater part of the report. For weeks Angell and his wife were busy mailing copies to all parts of the world. He says:

"We sent them to members of Congress, to nearly all the leading newspapers of the country, to the hundreds of medical gentlemen all over the country belonging to the "American Public Health Association," to chemists, microscopists and scientific men, to granges, to foreign ministers and consuls, in fact, to everybody that, during several weeks, we could think of, who might have influence."

PUBLIC PETITIONS CONGRESS FOR PROTECTION.

The entire nation was stirred up. Eighteen petitions and resolutions coming from various sections of the United States requesting the passage of a Federal law prohibiting the adulteration of food and drugs were spread on the records of the 46th Congress, 3rd Session, 1880–1881, and twelve such petitions were recorded during the 1st Session of the 47th Congress.

Bills prohibiting Food and Drug Adulteration were introduced in 1881 by Representatives J. R. Hawley of Connecticut; A. A. Hardenbaugh of New Jersey; R. P. Flower of New York and Senator Warner Miller of New York. A Congressional Report (1882), R. H. Horr of Michigan, chairman, dealing with various phases of the subject, was made by the Committee on Commerce, to which was referred the Flower Bill; also reported amended bill which was ordered printed.

The report considers public health and morals, standards, states rights, interstate commerce, importation of adulterated foods and drugs, commercial enterprises and the medical profession's need of pure medicine.

The above shows what one determined individual of proper capacity and means can accomplish. Angell and many others thought the day for the passage of a food and drug law was at hand. In this they were all mistaken. Angell ceased activities, in fact disappeared completely from the picture, so far as food and drug legislation was concerned. One cannot help but feel that with the momentum acquired, if Angell had continued his aggressiveness, a Federal law would have been enacted within a short time, rather than a quarter of a century later.

STATE ASSOCIATIONS.

The state associations, with few exceptions, hold their annual meetings during the summer months and the greater number of these meetings have been held. It is pleasing to note that the attendance has been very good and the programs indicate a progressive, coöperative endeavor in the promotion of pharmacy. It is noted that quite a number of the resolutions which were adopted at the Baltimore meeting of the AMERICAN PHARMACEUTICAL ASSOCIATION struck a responsive chord and were embodied and adjusted in the resolutions passed by the state associations, all of which indicates the coördinating influence of the House of Delegates and also the value of contact through the Conference of Pharmaceutical Association Secretaries. The Conference of Law Enforcement Officials promises to serve both associations and Boards of Pharmacy in a related way.

Members of the associations will find much to interest them in the minutes now being published in the JOURNAL; it is regretted that only brief references, chiefly names of new officers, can be made at this time to the transactions of state associations. Opportunity is taken to congratulate those that have held their sessions on their helpful work and to extend good wishes to other associations, that are to meet later, for successful and profitable conventions.

The AMERICAN PHARMACEUTICAL ASSOCIATION seeks in every way possible to be of service, and it is pleasing to note that there is a general indication of growing interest in professional pharmacy and a realization that the successful promotion of pharmacy results not only from the developed capacities of its votaries, but is equally dependent upon their active coöperation in state and national endeavors and of the respective organizations.

THE SECTIONS OF THE AMERICAN PHARMACEUTICAL ASSOCIATION

ABSTRACTS OF THE MINUTES OF THE SESSIONS HELD IN BALTIMORE, MD., MAY 7–9, 1930.

(See also brief summary reports, Final Session House of Delegates, printed in June JOURNAL.)

SCIENTIFIC SECTION.

EDITOR'S NOTE: Owing to the illness of the reporter of the sessions of the Scientific Section these are given in abstract, without titles of papers; reports of committees are included and also address of the Chairman. In this connection it should be stated that the minutes of the Conference of Law Enforcement Officials are also omitted. This is regretted; Miss Coffin gave close attention to the work and having reported the meetings of two prior years is well qualified and interested in the work of the A. PH. A. She is improving and we hope will soon be well. Her trouble does not permit the use of her eyes.

The Scientific Section held two regular sessions, the first on Wednesday afternoon, May 7th at 2:00 P.M., and the second on Friday afternoon, May 9th at 2:00 P.M., also a Joint Session with the Section on Practical Pharmacy and Dispensing on Thursday evening, May 8th at 8:00 P.M.

The first order of business of the First Session was the reading of the Chairman's address. Following the usual course of procedure, the address was referred to a committee on Chairman's Address, consisting of Messrs. F. O. Taylor, H. W. Youngken and W. T. McClosky.

This was followed by a brief report for the year by the Secretary, which report was accepted. The report of the Committee on Review of Papers was presented by Chairman Munch; and the report of the Committee on Minimum Requirements for Membership in the Section was presented by Mr. Bibbins. Dr. Krantz presented the report for the Committee to Coöperate with the National Conference on Pharmaceutical Research; all of which reports were accepted.

Chairman Langenhan appointed the following to serve as Nominating Committee: Messrs. Bibbins, Zeigler and Terry.

The authors then presented twelve papers, and twenty-two papers were read by title.

The meeting recessed until May 8th, when the Joint Session was held.

The Joint Session of the Scientific and the Practical Pharmacy and Dispensing Section was called to order by H. C. Newton, Chairman of the Section on Practical Pharmacy and Dispensing, Thursday evening, May 8th at 8:00 P.M.

A paper on "The Extent of Use of Former Pharmacopœial Products" was presented by E. Fullerton Cook and Harvey P. Frank.

The report on the U. S. Pharmacopœia was presented by E. Fullerton Cook.

The report of the Committee on Ebert Prize was presented by Chairman Glenn L. Jenkins.

The report on the National Formulary was presented by E. N. Gathercoal.

The report of the Committee on Unofficial Standards was also presented by E. N. Gathercoal.

The meeting was then turned over to the Scientific Section, H. A. Langenhan presiding.

The report on Pharmaceutical Recipe Book was presented by J. Leon Lascoff.

The report on Glass Standardization was presented by H. V. Arny, after which the Joint Session adjourned.

The first part of the Second Session of the Scientific Section, held Friday, May 9th, was devoted to the presentation of papers, twenty-three papers being presented by the authors, and thirteen being read by title.

The report of the Committee on Monographs was read by Chairman Swanson and the Report of the Committee on Chairman's Address was read by Mr. Taylor.

The following were appointed to serve as the Committee on Review of Papers: Messrs. Jenkins, Swanson and Husa.

The Committee on Nominations presented the following names for the various offices of the Scientific Section for the coming year: *Chairman*, E. E. Swanson, Indiana; *First Vice-Chairman*, L. E. Warren, Washington, D. C.; *Second Vice-Chairman*, R. E. Schoetzow, New York; *Secretary*, L. W. Rowe, Michigan; *Delegate to the House of Delegates*, H. A. Langenhan.

As no nominations were received from the floor, upon motion, duly seconded, it was voted to instruct the Secretary to cast one ballot for the officers nominated. This being done, the officers named were declared elected, and were then installed by the retiring chairman, H. A. Langenhan.

The Section then adjourned.

EDITOR'S NOTE: About all that is necessary to be printed in a succeeding number will be titles of papers with action thereon; most of these titles were published in the April JOURNAL pages 416–418. The addresses and reports follow, but all of them may not be in regular order.

THE CHAIRMAN'S ADDRESS.

BY H. A. LANGENHAN.

At the meeting of the Scientific Section last year several recommendations were offered. These were referred to special committees and will be reported on in due time. The recommendation relating to the five subdivisions of this section, *viz.*, Bacteriology, Chemistry, Pharmacognosy and Botany, Pharmacology and Bio-assays, and Pharmacy suggested a survey of the JOURNAL literature for the purpose of grouping the papers presented, under these five subdivisions. The close relationship existing between the papers presented before the Section on Practical Pharmacy and Dispensing and the Scientific Section, together with the fact that not all of the papers appearing in the JOURNAL were labeled as to the Section before which they were or would have been presented, introduced an obstacle for the grouping of the papers of the Scientific Section alone. Hence all of the papers appearing in the JOURNAL were classified as far as feasible and out of these, those representing the five subdivisions assembled separately. The results are as follows:

JOURNAL OF THE AMERICAN PHARMACEUTICAL ASSOCIATION.	1928.	1929.
Bacteriology	4	2
Chemistry	33	38
Pharmacognosy and Botany	6	5
Pharmacology and Bio-assay	23	31
Pharmacy	20	23

The classification represents both the Section on Practical Pharmacy and Dispensing and the Scientific Section. In the Chemistry group many of the papers are on assay methods some of which were presented before the Section on Practical Pharmacy and Dispensing, and some of the papers grouped here under the Pharmacy subdivision were presented before the Scientific Section. Taking this into consideration it may be assumed that the papers on Pharmacology and Bio-assays, 31 in number for 1929, predominate in the Scientific Section; that of Pharmacognosy, Botany and Bacteriology are not heavily represented, and that the Pharmacy papers even though presented before two sections are not keeping up in line. As about 60 per cent of the membership of the ASSOCIATION is composed of retail pharmacists, according to Secretary Kelly's report, it may be suggested that the Pharmacy topics should outnumber the others, being presented before two sections, for it may be assumed that the retail pharmacists comprising 60 per cent of the membership would be more interested in the contents of the JOURNAL if the information came within their scope of interest and understanding. To the instructors in manufacturing and dispensing pharmacy this would be a welcome condition. Manufacturing and dispensing pharmacy has advanced so rapidly during the last decade that neither textbooks nor instructors have been able to keep abreast with the progress, mainly because an insufficient amount of research, relating to these two subjects, has been carried on and published. Foreign journals offer more information for these instructors than do the American journals. However, the former are not always usable and apparently the problems of the European pharmacist differ somewhat from those of the American pharmacist if one is to judge by the type of papers published. Many of the Galenicals of the U. S. P. and N. F. are still made empirically; the chemistry, therapeutics and composition of the finished product is not clearly understood. For example, the chemistry of the Arsenical Solutions, the Hypochlorites, the Liquid Bismuth preparations, etc., needs yet to be explained. The action of solvents used in extraction and the adjuncts to these is not understood; the constituents of many vegetable drugs are yet unknown. Instructors in manufacturing and dispensing pharmacy are all familiar with these deficiencies, having been asked repeatedly to explain this and that and too often must reply "this has not been investigated as yet." Undoubtedly the

U. S. P. and N. F. revisions committees would welcome additional research on pharmacy problems and the instructors of these subjects would welcome it with open arms.

According to the 1928–1929 report of the National Conference on Pharmaceutical Research, the number of research workers representing the manufacturing pharmacists is 178 and the number representing pharmaceutical teachers and students 188. Upon grouping the authors for the JOURNAL for 1929 under these two classes, as far as feasible, 43 papers represented the manufacturer and 38 the teacher. In both groups the number of investigators falls below the number of papers for some of the investigators presented more than one paper. This report totals the research workers as numbering 461. Suggesting possibly that encouragement be offered to this majority of workers not represented in the 1929 JOURNAL to offer their results for publication, hoping that they will add to the information so badly needed.

This study of the JOURNAL literature stimulated several suggestions. *First*, the attempt to group the investigators brought forth the information that many of them failed to indicate what their affiliations were. To know where the investigator is located and in what field of work he is engaged would add to the value of the paper. *Second*, the addition of a summary of conclusions or the object of the investigation followed by a statement explaining the relation of the problem to professional pharmacy, as has been done by some of the writers, could well be done by all. Such summaries offer a "quick" survey of the paper and when read by the "Busy" reader would often stimulate a desire to read the entire topic, and after all a considerable value of any paper is the number of readers benefited by it. *Third*, it may be inferred that a paper read before the Section and published in the JOURNAL has the approval of the Section as to its value and correctness. Papers presented by title only, receive the same approval when published. It might be feasible that papers presented by title only be so marked. None of these suggestions are of vital importance, but each and all might tend to create even a greater interest in the JOURNAL and the work of the AMERICAN PHARMACEUTICAL ASSOCIATION.

Custom has decreed that the Chairman of the Section extend to the participants in the program the thanks of the Section. This I do; especially to the Secretary for his efficient service. If this Session is a successful one, as I assume it will be, it is due to his work and efforts. Had I any recommendations to offer it would be to make the present secretary a permanent one.

While the report of the Committee on the Chairman's Address was made later, for convenience, it is inserted here.

Report of Committee on Chairman's Address.

The Chairman in his address offers no definite recommendation for consideration and action, so your Committee had a task of unusual simplicity. However, we do wish to emphasize by reference to them in this report through suggestion he has made, and ourselves suggest that they be directed to the attention of the Council and Editor of the JOURNAL for any appropriate use that seems desirable.

First, that it seems desirable in the publishing of papers "to know where the investigator is located and in what field of work he is engaged."

Second, "the addition of a summary of conclusions or the object of the investigation followed by a statement explaining the relation of the problem to professional pharmacy, as has been done by some of the writers, could well be done by all."

"Such summaries offer a quick survey of the paper and when read by the busy readers would often stimulate a desire to read the entire topic, and, after all, a considerable value of any paper is the number of readers benefited by it."

Third, "it might be feasible that papers presented by title only be so marked."

For the brief survey of types of papers presented to the Scientific Section and the suggestions made we wish to commend the address of the Chairman.

May 9, 1930.

F. O. TAYLOR
HEBER YOUNGKEN
W. T. MCCLOSKY.

Secretary's Report.

Two notices were sent out to a carefully revised mailing list of some 260 members of the Scientific Section by the Secretary on December 13, 1929, and February 14, 1930. These notices

called attention to the earlier date of the annual convention in 1930 and asked coöperation in the early submission of titles and abstracts for the program of the Scientific Section.

The response has been very gratifying and a total of 70 titles has been received in time for printing in addition to several which were too late for the official program. Of this number all but five are available in abstract form, copies of which are in your hands.

The Secretary takes this opportunity to thank the members of the Section and particularly the authors of papers for the splendid coöperation they have evidenced in the necessity for haste due to the shorter time between annual conventions.

L. W. ROWE, *Secretary.*

Report of Committee on Monographs.

Your committee presents the following recommendations:

1. That the Scientific Section begin work on the first monograph as soon as practicable and that the preparation of subsequent monographs be taken up at such times as it appears advisable.

2. That the preparation of each monograph be placed in the hands of a committee of five, the chairman of this committee to be appointed by the incoming chairman of the Scientific Section and the other members to be selected from a lot of voluntaries by the chairman of the Monograph Committee.

The Monograph Committee shall continue to serve until the monograph assigned to it has been completed and published.

3. Each monograph committee shall be authorized to confer with the Committee on Publications of the A. PH. A. and to present plans regarding financial arrangements for publication of the monograph.

4. A symposium shall be arranged at each annual meeting of the Scientific Section for presentation and discussion of the results of the collaborative studies made in connection with the preparation of the monographs.

5. The committee feels that among the drugs deserving consideration for this type of study are: Ergot, Aconite, Digitalis, Hydrastis, Opium, Ephedra, Cascara Sagrada and Nux Vomica.

6. That Ergot or Aconite be selected as the subject of the first monograph.

(Signed) EDWARD E. SWANSON
WILLIAM J. HUSA.

Committee Review of Papers.

Your committee upon the review of papers, after much correspondence and several conferences, has reached the conclusion that scrutiny of papers prior to their presentation is impracticable (at least under the present conditions).

We make the following recommendation regarding papers submitted for publication:

1. It is recommended that a committee representative of the interested scientific groups be appointed by the outgoing chairman to serve in an advisory capacity to the Editor of the JOURNAL.

May 7, 1930. (Signed) L. W. ROWE
JOHN C. KRANTZ, JR.
JAMES C. MUNCH.

Minimum Qualifications for Full Membership in Scientific Section.

Your committee appointed to consider suggestion of Chairman Munch, "That some minimum qualification be established for full membership in the Scientific Section," reports as follows:

The Committee has had some correspondence during the year and a meeting in Baltimore.

The Committee does not believe that it is practicable to attempt to regulate the membership in the Scientific Section without having such a regulation included in the By-Laws of the ASSOCIATION.

The Committee feels that the aim of the Scientific Section should be to interest the retail pharmacist in scientific pharmacy and an attempt to place restrictions on membership would defeat this purpose.

The Committee recommends that this recommendation be not adopted.

May 7, 1930. (Signed) F. E. BIBBINS
WM. T. MCCLOSKY.

Report of the Ebert Prize Committee.

After a thorough study of all of the papers presented at the Rapid City meeting of the Scientific Section of the A. PH. A., published and unpublished, your committee has selected from a number of very commendable papers one which is especially meritorious.

Mr. Chairman, your Committee recommends that the Ebert Prize for 1930 be awarded to Mr. Marvin Thompson for his comprehensive study of the pharmacology of ergot.

May 8, 1930. (Signed) GLENN L. JENKINS, *Chairman*
LOYD F. HARRIS
L. E. WARREN.

The Committee on Nominations—consisting of R. L. Terry, W. H. Zeigler and F. E. Bibbins, *Chairman*—reported as nominees the names included in the Secretary's report to the House of Delegates. These were elected and duly installed to serve for the ensuing year. The Secretary's report to the House of Delegates appears in the minutes of the latter body, but for reasons that have been indicated, is reprinted here; it follows:

Report to the House of Delegates.

The Scientific Section held two very lengthy afternoon sessions in addition to a Joint Session with the Section on Practical Pharmacy and Dispensing.

Seventy titles of scientific articles in the fields of pharmaceutical chemistry, pharmacology and bio-assays, and pharmacognosy and botany were listed for presentation on the official program and of these thirty-six were read and the others presented by title.

New officers elected for the coming year are as follows: *Chairman*, E. E. Swanson, of Indianapolis; *First Vice-Chairman*, L. E. Warren, of Washington, D. C.; *Second Vice-Chairman*, R. E. Schoetzow, of Brooklyn; *Delegate to the House of Delegates*, H. A. Langenhan, of Seattle. The Secretary has one more year of his three-year term.

L. W. ROWE, *Secretary.*

SECTION ON PRACTICAL PHARMACY AND DISPENSING.

The First Session of the Section on Practical Pharmacy and Dispensing was convened at 9:00 A.M., May 8th, by Chairman H. C. Newton. In the absence of Secretary E. O. Leonard, I. A. Becker was elected *Secretary pro tem.*

The first order of business was the reading of the Chairman's address; it follows:

CHAIRMAN'S ADDRESS.

BY H. C. NEWTON.

INTRODUCTION.

To this First Session of the Section on Practical Pharmacy and Dispensing of the 78th annual convention of the AMERICAN PHARMACEUTICAL ASSOCIATION, we have the privilege and the pleasure of welcoming you. We realize that in many cases attendance here at this time of the year means a considerable sacrifice on your part, in being absent from your places of business. Recognizing this we shall endeavor to so conduct our sessions that they will not overlap upon the time of others, in order that you may plan your time and use it to the utmost advantage. We trust you will actively participate in the discussion of the subjects that will be presented and that you will feel free to constructively criticize the work of the Section. It has been less than a year since we met in Rapid City, South Dakota, where, inspired by the great natural

beauty of our environment, we calmly and comfortably considered the problems that confronted our Section. Now we meet in the thriving city of Baltimore where industrial activity predominates. Here we are inspired by the spirit of a metropolis. Let us have this spirit of accomplishment prevail in the meetings of our Section, whereby we may make the best use of our time spent here and may do the most good for our profession.

U. S. PHARMACOPOEIA XI.

We are on the eve of the beginning of the work upon the eleventh decennial revision of the U. S. Pharmacopœia and the sixth edition of the National Formulary. Later, in our program we shall have most interesting and timely reports upon studies relating to these official volumes by men who have been prominent in the previous revisions. We feel that the members of this Section should be especially interested in these forthcoming revisions and we urge that you all assist in making these volumes of *maximum utility in the practice of pharmacy*. Let us each give at least as much time and attention to the work of the members of the revision committees, after they are selected, as we do to the matter of selecting them. Time and attention so devoted would, we are sure, greatly aid in the progress of the revisions.

U. S. PHARMACOPOEIA AND NATIONAL FORMULARY PROPAGANDA.

We are glad to note an increased amount of interest in the advocating of the use of the U. S. P. and N. F. preparations by pharmaceutical organizations in Chicago, Detroit, and in other parts of the country. As pharmacists, I fear we are inclined to take one of two rather undesirable attitudes in the matter of use of the official preparations. *First*, many of us do not give the U. S. P. and the N. F. more than a mere superficial consideration. We may obtain the new revisions as they are issued and note what preparations have been dropped and any changes in formulas that may have been made. Further than that we do not take the time to investigate. In other words we are indifferent to the real value of these volumes. Then, *second*, are those of us who take another attitude. We purchase the new revisions just as soon as they are available; we note every change, every addition, every deletion. We really study them as textbooks and get enjoyment from that study. But, do we usually make the maximum use of the knowledge gained from this study? Probably not. We are apt to assume that every pharmacist and every physician has done the same as we have and that each knows all about the official preparations just as we know them. Consequently we do not think of calling the attention of the physicians to them. We take the position that if the physician wanted the official preparations he would prescribe them without any urging on our part.

We, personally, feel that both of these positions or attitudes are deplorable. In the first case we have indifference, a powerful weapon, one which will kill most any project. In the second case we do not recognize the opportunity offered for utilization of our knowledge. If we only realized how little the average physician knows about the preparation of medicines and how glad he would be to be able to make the utmost use of the professional skill of the pharmacist provided he could be absolutely sure that the pharmacist could be relied upon to dispense uniformly well prepared official preparations! It is the doubt about the professional skill of the pharmacist that often leads to the prescribing of the proprietary product. We believe that the AMERICAN PHARMACEUTICAL ASSOCIATION should recognize the extreme value of U. S. P. and N. F. propaganda and that it should offer a direct aid to its members in the planning and executing of campaigns for this purpose. This is an opportunity for the AMERICAN PHARMACEUTICAL ASSOCIATION to gain a real contact with the retail pharmacist, a contact which often seems rather sadly lacking. We believe the ASSOCIATION should be active in this work and not give mere passive approval to it while other pharmaceutical groups attempt to carry it on. On our program to-day we have a paper on this subject by a man who has been a successful leader in the work. He will demonstrate its very practical value.

DISPENSING.

It is generally agreed that the compounding of prescriptions is one of the chief duties and privileges of the pharmacist. It is one phase of the profession that is universally restricted and designated as his by law. And, it is one phase of the practice of pharmacy where we may exercise professional skill and receive a fee for the professional service involved. Since this is

true, would it not be well for our ASSOCIATION to provide its members with every possible aid in the dispensing of prescriptions? Should not the JOURNAL contain a maximum amount of material that is of direct value in the dispensing of prescriptions? We believe that every member of the ASSOCIATION should receive so much valuable information upon modern dispensing through the JOURNAL or through some other medium of the ASSOCIATION that he will be in a preferred position in compounding prescriptions. Then membership in the ASSOCIATION will be considered a necessity by practicing pharmacists. Is it not possible for our ASSOCIATION to occupy that position in the minds of practicing pharmacists? We think it is quite possible and that an attempt should be made to reach that goal.

ORGANIZATION.

During the past year and, in fact, for several years, the officers of this Section have been handicapped by two conditions that have been allowed to exist largely because of a hesitancy on the part of most of us when it comes to making changes that may involve controversy and that always bring down increased work upon the one who initiates the changes. This year it would be much easier and simpler for us to follow precedent and, ignoring the weaknesses in our organization, pass the whole proposition along to the incoming officers. However, we feel it would not be perfectly fair to them if we do not at least point out some of the facts that we have learned from experience.

The first troublesome condition results from the fact that the term of office of the Secretary of the Section has been but one year. Upon the Secretary falls the duty of preparing the programs of the meetings and of doing the real work of the Section. With a new secretary each year this officer is hardly acquainted with the situation and is just completing preparations for the efficient functioning of his office when his term expires.

A second handicap is the lack of specific information on just what are the full duties of the officers of the Section and of the Section as a whole. If we were to interpret the Constitution and By-Laws literally, the Section is a very passive organization, whereas we believe it should be decidedly active. We have a Section secretary, a Section chairman, the ASSOCIATION Secretary and the ASSOCIATION Editor, all with a very friendly feeling toward each other yet each surprised at the activity or lack of activity of the others because he does not know exactly what he should expect of them. This causes delays, emergency methods and other undesirable results.

RECOMMENDATIONS.

In accordance with the observations that we have made and in order to promote the welfare of our organization, we make the following recommendations:

1. That the AMERICAN PHARMACEUTICAL ASSOCIATION, through its general offices, actively participate in advocating the use of U. S. P. and N. F. preparations.

2. That a division of the JOURNAL be devoted to the modern compounding and dispensing of prescriptions.

3. That the Secretary of this Section be elected for a term of more than one year (and that he be paid an honorarium or that the Secretary of the ASSOCIATION or a paid assistant secretary of the ASSOCIATION be made secretary of the section).

In closing we wish to express our appreciation of the work of our Secretary, Dean E. O. Leonard, in preparing this program and for the valuable assistance of Secretary E. F. Kelly and Editor E. G. Eberle of the ASSOCIATION.

On motion of F. W. Nitardy, duly seconded, it was voted that the Chairman's address be referred to a Special Committee and reported back at the next session. The following were appointed: Chairman, A. B. Nichols, F. W. Nitardy and Wm. Gray. (*The report of the Committee on Chairman's address was made at the Second Session, but for convenience it is reported here.*)

Report of the Committee on Chairman's Address.

"The Committee on the Chairman's address, of the Section on Practical Pharmacy and Dispensing, have duly considered the recommendations in the Chairman's address and make the following report.

"*Recommendation No. 1.*—'That the A. PH. A. through its general phases actively participate in advocating the use of the U. S. P. and N. F. preparations.' The Committee realizes

that the U. S. P. and N. F. preparations cannot be brought to the attention of the physician too strongly. We are cognizant of the fact, however, that detailing and advertising by the parent body would be an expensive proposition, and we are not at all certain that the ASSOCIATION is in a position to advance any material sum to such a cause at the present time. We recognize the fact that several branches have in the past made specific appeals to physicians either by detailing part items or in other ways calling attention to the many possibilities offered, particularly with the N. F. preparations and we commend this type of activity to all the branches for their earnest consideration.

"*Recommendation No. 2.*—'That a division of the JOURNAL be devoted to the modern compounding and dispensing of prescriptions.'

"The Committee feels that inasmuch as the space in our JOURNAL is very valuable and inasmuch as the majority of the drug trade Journals do carry such a department, it would be inadvisable to provide such a section unless an individual could be found who could devote the time necessary to properly prepare such a column, one who is actively engaged in prescription compounding and one who could make the department a real asset to the JOURNAL and be a valuable aid to the practicing pharmacist. If these conditions can be met we feel that such a column be recommended.

"*Recommendation No. 3.*—'That the Secretary of this Section be elected for a term of more than one year.'

"The Committee calls attention to the fact that the By-Laws of the Section state that the Secretary may be reëlected to office and we think that this is all that is necessary, for the Section would be glad to reëlect a Secretary who had ably filled the office and provided the Section with a well-balanced program."

(Signed) ADLEY B. NICHOLS, *Chairman;* WILLIAM GRAY; F. W. NITARDY.

The report of the Committee was accepted and approved.

(*Abstracts of discussions of contributions will be printed when the papers are published unless some action requires publication.*)

The following papers were presented:

"The Acidity of Aromatic Elixir, by John C. Krantz, Jr., and Jeleff Carr. (Discussion.)

"What Is a Pharmacist's Professional Service Worth?" by Robert J. Ruth. (No discussion.)

"Methods for the Preparation of Strong and Mild Silver Protein Solutions," by Marvin J. Andrews. (Discussion.)

Chairman Newton appointed the Committee on Nominations as follows: *Chairman,* Louis Saalbach; Ivor Griffith; W. F. Gidley.

The reading of papers was continued.

"An Annual Supplement to the U. S. P.," by F. W. Nitardy. (Discussion.)

"Borax in Cold Cream," by Wilbur L. Scoville. (Discussion.)

"Comment on the U. S. P. with Reference to the Forthcoming Revision," by F. W. Nitardy. (Discussion.)

"The Prescription Business in Buffalo," by Leon Monell. (No discussion.)—Printed in June JOURNAL A. PH. A., page 583.

"The Results of U. S. P. Study," by E. F. Cook.

The author distributed mimeographed copies of his paper and gave it in abstracted form. He also said that at the joint session of this Section and that of the Scientific Section he would deliver a paper somewhat along the same lines.

Mr. Gray inquired whether the suggestion made by the author about buying certain fluidextracts in small packages should be modified. He could see no reason why fluidextracts could not be purchased in gallon bottles and then poured into ounce bottles.

The author replied that Mr. Gray would do that but, perhaps, ninety-nine others would let the gallon bottle stand on the shelf and the product would deteriorate. The money saved by buying bulk would be lost in the extra cost of bottles.

Ivor Griffith said that he was asked to visit the dispensary of a small hospital in Philadelphia which had been in charge of a trained nurse alleged to know something about pharmacy. Among other things there were three one-gallon bottles of fluidextract of ergot on the shelf which

had been opened and this had been purchased in the interest of economy. He was of the opinon that preparations which might deteriorate should be bought in small containers.

The question was asked why Elixir iron, quinine and strychnine was deleted from the Pharmacopœia. The author of the paper replied that this would be gone into more fully at the Joint Session. He said that Elixir of iron, quinine and strychnine phosphates had been admitted to U. S. P. IX. Several members had devoted experimental work on the preparation and brought their reports to the U. S. P. Committee. A sample had been given to a prominent pharmacist in New York and he made a satisfactory report, but it had remained on the shelf only a day.

Another member reported that experiments had been made elsewhere and the reports were unsatisfactory. Preparations were on the market that contained the iron in the form of chloride instead of phosphate and this preparation had better keeping qualities.

The last paper read during the session was "A Review of Five Hundred Prescriptions," by A. C. Taylor. (No discussion.)

The Joint Session with the Scientific Section was held May 8th at 8:00 P.M.—For program see Scientific Section.

SECOND SESSION.

The Second Session of the Section on Practical Pharmacy and Dispensing was called to order by Chairman H. C. Newton at 2:15 P.M., Friday, May 9th. The reading of papers was continued as follows:

"Drug Dispensing in a Large Hospital," by R. S. Fuqua. (No discussion.)

"It Can Be Done," by J. Leon Lascoff. (Discussion.)

On motion duly seconded appreciation was expressed of the paper by Dr. Lascoff and he was invited to continue his presentation at the next annual meeting.

"Detailing the Doctors," by John H. Webster. (Discussion.)

"Aromatic Elixir of Gluside," by Clyde M. Snow and Bernard Fantus.

Clyde M. Snow stated that the reason for glycerin in the elixir is explained by the two prescriptions which had been presented by Dr. Lascoff.

"Pharmaceutical Training *Versus* the Modern Pharmacy," by Wm. F. Reindollar. (Discussion.)

"Recommended by All Reliable Druggists," by Ivor Griffith.

The author stated that there is a tendency in modern medicine to diagnose and not treat. He suggested that the paper be submitted to the House of Delegates.

Mr. Hunsberger moved the adoption of the following resolution:

> "That it is the sense of the Section on Practical Pharmacy and Dispensing that such phrases as 'recommended by all reliable druggists,' without sanction or warrant on the part of reliable druggists in connection with the advertising of nostrums are obnoxious to self-respecting pharmacists and that steps should be taken to restrain manufacturers from such misrepresentation."—See Resolution No. 35, page 526, May JOURNAL.

F. W. Meissner said that when newspapers are requested to eliminate such advertising, they oppose doing so, because it is a matter of business with them. He recalled a doctor, formerly on the State Board of Health, who allowed his picture to be used in a questionable sort of advertising and it greatly distressed the medical profession. "Such things," he said, "are very difficult to cope with."

Mr. Hunsberger thought that it might be a good idea to send the resolution to the American Medical Association.

Clyde M. Snow stated that in Chicago correction of such advertising methods had been made through the local associations.

Charles L. Meyer said that this should be brought to the attention of local associations and also to the advertising clubs by a special committee having such matters in charge.

Wm. F. Reindollar remarked that the Food and Drugs Act limits the use of such recommendations on the labels of packages, but does not prevent advertising elsewhere.

Leonard O'Connell presided during the presentation of the report of the Committee on the Chairman's address. As stated earlier, the report of the Committee was accepted.

The report of the Committee on Nominations was presented as follows: For *Chairman*, Ralph E. Terry, Chicago, Ill.; *Vice-Chairman*, Adolph Zieffle, Corvallis, Ore.; *Secretary*, W. Paul Briggs, Washington, D. C. For *Delegate to the House of Delegates*, H. C. Newton, Omaha, Nebraska. On motion of Leonard O'Connell, duly seconded, the recommendations of the Committee were adopted and by vote duly elected.

The Final Session of the Section on Practical Pharmacy and Dispensing was then adjourned.

THE SECTION ON EDUCATION AND LEGISLATION.

In the absence of Chairman Glenn L. Jenkins, the First Session of the Section on Education and Legislation was convened by Secretary Rudolph H. Raabe, at 2:00 P.M., Wednesday, May 7th. The Chairman's address and the Secretary's report were placed on the program for later consideration and the reading of papers followed:

"Visualizing Materia Medica," by C. J. Zufall. (Discussion.)

Chairman Jenkins having come into the room, the Chairman's address was read; it follows:

THE CHAIRMAN'S ADDRESS.

BY GLENN L. JENKINS.

Pharmacy has always been a conservative profession, and it has frequently been lacking in initiative and objective policies in the past, particularly in matters of legislation and education. During the past few years a more aggressive attitude has been followed with the result that much legislation is under consideration which, if enacted, should have a favorable influence upon the future of pharmacy. However, some of the pending legislation, if passed, may retard the progress of pharmacy.

It is not the purpose of this paper to review all of the pending legislation in all of its phases. However, it seems worth while to review briefly a few of the legislative matters which have been under consideration during the past year.

The Parker Bill, which deals with the coördination of Public Health activities and the promotion of Public Health research, has been passed by the House and Senate and signed by the President. The passage of this bill makes possible the appointment of pharmacists to positions of commissioned rank in the Public Health Service.

The Capper-Kelly Fair Trade Bill is nearing enactment. It has been reported and recommended for passage by the Committee on Interstate and Foreign Commerce. The passage of this Bill would permit the producer to fix the price at which a product may be sold at retail. It is believed by many that this would eliminate much of the wasteful cost of distribution and unfair retail competition now found in pharmacy.

The Pharmacy Corps Bill has been introduced in Congress. Favorable action on this Bill would make pharmacists eligible to commissioned rank in the Army, and it would provide much needed, adequate pharmaceutical practice in the military service.

All of the foregoing legislative matters are of first importance, and all of them should be pressed aggressively. Not only must all pharmacists lend their support to the passage of favorable laws, but once they have been passed, as in the case of the Parker Bill, pharmacists must see that all of the privileges and representation to which they are entitled are obtained.

The Hawley Bill, which has for its purpose the creation of a Bureau of Narcotics in the Department of the Treasury, has been recommended out of committee for passage. This Bill would abolish the Federal Narcotics Control Board established by the Narcotic Drugs Import and Export Act, and place the control of narcotics under a commissioner of narcotics. There is no reason to believe that this change in the narcotic administration would serve to handle the narcotic trade more efficiently. Pharmacy is represented on the present Federal Narcotics Control Board, and that representation might be lost if this Bill is passed.

The Williamson Bill transferring prohibition enforcement from the Treasury Department to the Department of Justice has passed the House. The passage of this Bill may result in further difficulties and restrictions in the pharmaceutical use of alcohol.

A paper treating of the need for uniformity and the coördination of the prerequisite requirements of the several states will be presented in the program of this Section. Legislation directed to this end should receive vigorous support from all state pharmaceutical groups. Legis-

lation should be sought which would restrict the sale of many of the potent, and in some cases, habit-forming new remedies. Requirements tending to limit the sale of such products to orders on prescription or otherwise would prove advantageous to pharmacy and prevent the adoption of unreasonable restrictions advocated from other sources.

Many progressive steps have been taken in pharmaceutical education in very recent years. The extension of the pharmacy course from a minimum of two to three years, and in many cases to four years with a partial liberalization of the curriculum at the same time is an outstanding achievement. However, the simple extension of the course of study does not insure a more thorough or liberal education in pharmacy. The quality of instruction is dependent upon the character and ability of the teachers. There is need for better qualified, more liberal teachers in the pharmacy colleges, as has been pointed out in papers presented before this Section in former years. The proposed survey of the colleges of pharmacy, sponsored jointly by the Association of Boards of Pharmacy, the Association of Colleges of Pharmacy, and the AMERICAN PHARMACEUTICAL ASSOCIATION, should prove of inestimable value as a guide to the future progress of pharmacy if the survey is conducted in a thorough manner.

During the past year, the colleges of pharmacy have been rated as and included among the professional schools for the first time by the Bureau of Education. The Personnel Classification Board in rating the Field Services of the Federal Government has placed senior pharmacists and pharmacists in the professional class rather than in the sub-professional class as originally proposed. These ratings should enable pharmacists to gain more general governmental recognition as professional men.

The development of men capable of conducting creative research through the institution of graduate work in a number of our colleges on a parity with the other sciences is one of the most outstanding marks of progress in pharmaceutical education in recent years. This development which has taken place simultaneously with the provision for adequate research facilities will ultimately aid greatly to secure the general recognition of pharmacy as a profession. While the colleges have promoted research and devoted their energies to the preparation of men qualified to carry it out, many of our pharmaceutical industries have diverted research funds into schools of chemistry and agriculture. In the past, when pharmacy lacked the properly qualified men and physical facilities for research, this attitude on the part of the pharmaceutical manufacturers was largely justifiable. Efforts should now be made to have the manufacturers of pharmaceutical products, who gained their present eminence from the support of pharmacists, award their research grants to colleges and schools of pharmacy.

Pharmacy must adopt a strongly aggressive attitude in matters pertaining to education and legislation in the future. Much can be done by securing favorable legislation and by the direct education of the public through such agencies as Pharmacy Week. However, we can never attain our ultimate goal until we have educated all pharmacists to the value of coöperation and coördination through organization.

In discussing Chairman Jenkins' address, A. L. I. Winne stated that in his opinion there was nothing more important before American pharmacy than pending legislation in Washington. He referred to the Parker Bill which had become law and said that with proper recognition from the U. S. Government a great many of pharmacy's difficulties would be solved. He was pleased to note the progress made with the Capper-Kelly Bill. He moved an acceptance of the Chairman's address and the Section voted accordingly.

The reading of papers was continued.

"Limited Content of Present Pharmaceutical Curricula," by W. F. Rudd. (Discussion.)

"Trend of Legislation as Indicated by the Courts," by R. L. Swain. (Discussion.)

"An Educational Study of Student Nurses in Pharmacy," by Lulu E. Kennedy, J. Cary Taylor and John C. Krantz, Jr. (Discussion.)

"U. S. P. and N. F. Preparations Fit for Beverage Purposes," by W. Bruce Philip. (Discussion.)

"A Few Problems in the Education of a Pharmacist," by Henry C. Biddle. (No discusion.)

"The New Pharmacy," by Edward Spease. (Discussion.)

Secretary Raabe reported that he had performed the duties of his office to the best of his ability and endeavored to arrange an interesting program.

Chairman Glenn L. Jenkins expressed his appreciation of the coöperation of the officers of the Section. He appointed the following as members of the Committee on Nominations: *Chairman*, Loyd E. Harris, A. L. I. Winne and John R. Minehart.

The First Session of the Section on Education and Legislation was then adjourned.

SECOND SESSION.

The Second Session of the Section on Education and Legislation was called to order by Vice-Chairman B. V. Christensen at 8:00 P.M., May 8th.

The reading of papers was proceeded with.

"The Importance of Physiological Chemistry in Modern Professional Chemistry," by Lloyd Riggs. (Discussion.)

"The Scope of Materia Medica Teaching in the Pharmacy School," by H. H. Rusby. (Discussion.)

"Recent Legislation Affecting Pharmacy in Virginia," by A. L. I. Winne. (Discussion.)

"Legislative Activities of Massachusetts State Pharmaceutical Association," by Carl G. A. Harring. (Discussion.)

"Some Aspects of Present-Day Trend in Pharmaceutical Education," by John L. Dandreau. (Discussion.)

"The Need for Uniformity and Legal Requirement for Practical Experience," by H. C. Christensen. (Discussion.)

"Student Membership in the A. PH. A.," by B. V. Christensen. (Discussion.)

"Educating the American People in the Profession of Pharmacy," by D. B. R. Johnson. (Discussion.)

The Committee on Nominations reported the names of the following for officers for the ensuing year: *Chairman*, B. V. Christensen, Gainesville, Fla.; *Vice-Chairman*, R. H. Raabe, Ada, Ohio; *Secretary*, C. M. Anderson, Oklahoma City, Okla.; *Delegate to the House of Delegates*, Glenn L. Jenkins, Baltimore, Md.

There being no further nominations it was moved, seconded and carried that the report of the Committee on Nominations be received and the officers elected.

The officers for the ensuing year were then installed and the Final Session of the Section on Education and Legislation was adjourned.

THE SECTION ON COMMERCIAL INTERESTS.

The First Session of the Section on Commercial Interests was called to order by Vice-Chairman Noh at 2:00 P.M. on May 7th. He stated that it was impossible for Chairman Denny Brann to be at the meeting, so that the duty of presiding fell to his lot.

Secretary Rowland Jones said he had no report except to thank the members who coöperated in preparing the program.

The reading of papers was next in order.

"Your Guest—The Drug Store Customer," by W. Bruce Philip. (The paper is printed in the June JOURNAL, page 581.)

"Seven Ways to Meet Competition," by Clyde L. Eddy. (Discussion.)

"The New York Questionnnaire," by Leon Monell. (No discussion.)

Acting Chairman Noh appointed as members of the Committee on Nominations: *Chairman*, C. Leonard O'Connell, John A. J. Funk, Thomas Roach.

The reading of papers was continued.

"The Importance of Net Profit," by C. Leonard O'Connell. (No discussion.)

"Simplification and Standardization as Aids to Industry," by W. E. Braithwaite. (No discussion.)

"How Can a State Secretary Best Serve the Members of His Organization?" by Walter D. Adams. (No discussion.) The paper is printed on page 577 of the June JOURNAL A. PH. A.

"The Druggist—Well, What about Him?" by Robert J. Ruth. (No discussion.)

SECOND SESSION.

The Second Session of the Section on Commercial Interests was called to order at 8:00 P.M. May 8th. The reading of papers was continued.

"Business Survey," by Wroe Alderson. (Discussion.)

A Resolution was passed to the House of Delegates expressing the appreciation of the help the Department of Commerce is giving to the business men of the United States. (See Resolution No. 33, page 526 of the May JOURNAL.)

"Shall We Make or Buy Our Pharmaceuticals?" by Charles J. Clayton. (Discussion.)

"What Should a Prescription Man Expect from a Professional Service Man?" by Charles E. McCormick. (Discussion.)

"Does the Present Form of the Pharmacopœia Interest the Physician?" by Ambrose Hunsberger. (Discussion.)

"The Pleasure and Satisfaction of Conducting a Professional Pharmacy," by Thomas Roach. (No discussion.) (The paper was printed on page 580 of the June JOURNAL.)

The following papers were read by title:

"Build Your State Associations on County and Congressional Units," by Bernard M. Keene.

"We Do Not Substitute—or Do We?" by Leonard A. Seltzer.

"New Cloth on an Old Garment or New Light on an Old Subject," by Leonard A. Seltzer.

"Profit, Total Sales and Rent II," by J. A. W. Luck.

Chairman O'Connell made the following report for the Committee on Nominations naming the following officers for the ensuing year: *Chairman*, J. G. Noh, Omaha, Nebr.; *Vice-Chairman*, Rowland Jones, Gettysburg, S. Dak.; *Secretary*, Leon Monell, Buffalo, N. Y.; *Delegate to the House of Delegates*, Denny Brann, Des Moines, Iowa; *Alternate*, R. B. Rothrock, Evansville, Ind.

The report of the Committee was accepted and a motion duly made and seconded that the nominees be elected officers for the ensuing year. The vote was carried. The officers were installed and the Section was adjourned.

THE SECTION ON HISTORICAL PHARMACY.

The First Session of the Section on Historical Pharmacy was called to order by Chairman George D. Beal at 2:00 P.M., May 7th.

The Chairman presented his address entitled "Is a Study of the History of Pharmacy Worth While?" The address follows.

IS THE HISTORY OF PHARMACY A WORTH WHILE STUDY?[1]

BY GEORGE D. BEAL.[2]

The study of history connects the past and present in our minds. It pictures for us the story of the successes and failures of men and nations. When we read it understandingly, we find the answers to many of our present problems. Men confronted with situations strikingly similar to ours, have acted wisely or unwisely as we ourselves may act.

Nearly every professional problem to-day has its counterpart in the present and past experiences of other trades, professions and industries. They have not always appeared in the same form and do not appear in identical fashion to-day to two professions. But, studied apart from their modern relationships, they appear to be governed by the same economic or physical laws as those problems of a century or more ago. It is only because of the greater number of processes and products, the changing trends of merchandising and the greater magnitude of our political groups that the professional problems seem to possess a different form and color.

In following the history of any science, particularly one governing professional practice, the principal benefit to be obtained is the experience of others as a guide to present action as well as an aid in future planning. These records are the stimuli to progress and the promise of reward that key up the young investigator or business man in his moments of depression.

Another benefit of the historical study of a science is the appreciation of the logical steps by which the knowledge and practice of the present day has been built up. This appreciation is a most potent factor in stimulating the investigative instinct, especially on the part of the

[1] Address of the Chairman, Section on Historical Pharmacy, AMERICAN PHARMACEUTICAL ASSOCIATION, 78th Annual Meeting, Baltimore, Md., May 5 to 9, 1930.

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younger members of the profession. No worth-while investigation, whether in pure science or its industrial applications, is successfully begun without a delving into the records.

There can be no genuine scientific training without historical study. This is demonstrable in the companion science of chemistry. Looking back at the writings of the alchemists, their mystical treatment of chemical reactions, their ambiguities in description, and their clouding of formulas with mythical references, astronomical and astrological allusions and symbolic characters instead of written words, seem like either child's play or the work of slightly deranged intellects. Their powers of observation were keen, their reasoning surprisingly logical, and their faulty conclusions are as likely to have been based upon the philosophies of the ancients as upon imaginings of their own. But we must do more than give them credit for laying the foundations for pure research. While many of them in their way were exponents of the field of pure science, both chemical engineering and manufacturing pharmacy were treated in a reasoning way, and the foundations for present-day practices laid.

Apart from laying the foundations for the utilization of science by industry, the experimental science of alchemy, verging into chemistry, began experimenting vaguely in the companion fields of medicine and botany, so that through iatro-chemistry came biochemistry, pharmacology and that chemical study of drugs and medicines which to-day constitutes the field of pharmaceutical chemistry. The chemical sciences, of which pharmacy is one, are almost hopelessly tangled in their origins, so that the history of one must be studied in all of the others.

This conclusion is further warranted by the close relationship that has existed between pharmacy and chemistry from the beginning, not only in the use of the name chemist for the profession of the pharmacist, but in the extent to which the chemists of the older days were engaged in the practice of pharmacy. In the absence of chemical manufacturing plants the dealer in chemicals must likewise be the producer thereof; and in the absence of chemical industries, the dealer in chemicals must alike supply the needs of the dyer, the tanner, the housewife and the physician. It is not strange that a century and a half ago the important discoveries in inorganic chemistry were made by pharmacists, that a century ago the name pharmacy preceded that of chemistry in our leading journals devoted to the chemical sciences, and that pharmaceutical chemists through their studies of vegetable drugs went a long way in laying the foundations of organic chemistry.

This traditional union between chemistry and pharmacy is felt just as strongly to-day as a century ago. If a new organic compound is not obviously a dyestuff, a resin or an explosive, the immediate hope is that it will possess medicinal properties. And upon what grounds will such a hope be based? Upon analogies in structure to the active principles of animal or vegetable drugs whose value has been proved by our predecessors.

The history of pharmacy should be an important part of every pharmaceutical curriculum and its written records upon the book shelves of every pharmacist. It should not only be treated as a special subject in the curriculum because of its cultural and inspirational value, but should be an every-day part of the presentation of each branch of pharmacy.

Let us say, then, that following the history of pharmacy, as of any other profession or art, accomplishes these things. It serves to impress the student with the extent to which observation, experience and the unconscious grasping at conveniences which almost automatically present themselves will eventually direct energies along labor-saving lines to economical manufacturing operations.

It brings to the mind of the student more forcefully than in any other way the interdependencies that exist among the natural sciences, causing a realization of what may be learned each from the other and what may be gained by the encouragement of mutual respect and intercourse.

By tracing the history of medicinal agents and pharmaceutical operations from their beginnings, it aids in formulating for the student the theories of these operations and behaviors.

Finally, by relating the studies and labors of the masters, it develops in the mind of the apprentice the thought of pharmacy as an honorable profession, one ranking above mere trades. Many persons feel that pharmacy is passing through a critical economic stage at this time. The concentration of manufacturing pharmacy in large establishments, changing fashions in the practice of medicine, and the growth of new merchandising methods have given to the casual observer at least, the thought that merchandising pharmacy of 1930 is vastly different from that

of 1895. Modern trends in the administration of schools and colleges have likewise changed the methods of pharmaceutical education. It seems, then, that pride in profession, and respect for past developments, will do much to place the pharmacists of the present in a frame of mind which will continue to hold them in positions of business and community leadership which they have occupied in the past.

Secretary J. T. Lloyd stated that he had no formal report to make but desired to thank the members of the ASSOCIATION who had given hearty coöperation in preparing the program.

The report of the Historian was called for. It follows:

THE HISTORIAN'S REPORT.

BY E. G. EBERLE.

The Historian has continued the method begun a number of years ago of clipping items which have a bearing on the history of pharmacy. A large part of these clippings and pictures deal with the Rapid City meeting of the ASSOCIATION.

The ASSOCIATION has received from Mrs. Frank H. Carter, widow of our late fellow member, in Indianapolis, a loving cup which was presented to Mr. and Mrs. Carter at the Indianapolis meeting of 1906, at which time Mr. Carter was very active in arranging for the meeting; also a brass mortar which originally was in use in the pharmacy of one of our former presidents, George W. Sloan of Indianapolis. The Historian thanks Mrs. Carter and also her niece, Miss Laura H. Hartman, for their interest and gift.

The ASSOCIATION has also received from Mrs. Schneider, widow of the late Dr. Albert Schneider, a copy of each one of Dr. Schneider's works. Our thanks are due to Mrs. Schneider. These books are part of the exhibit here in the hotel.

We are not situated, as far as the office of the ASSOCIATION is concerned, so as to invite a large number of the members to visit us to see what we have for the Library and Museum. Quite a number of boxes received have never been opened, because we thought these books could be better preserved in the cases than taken out and not be protected; none of the cases of books donated by Dr. J. H. Beal have been opened. The Historian thought, in view of these conditions, that the members would expect to see some of the books that the ASSOCIATION now has. In making a very small exhibit, attention has not been given to sets but rather types of various publications relating to pharmacy. For example, we have a full set of U. S. Pharmacopœias donated by Mrs. Whelpley, but only a few of them have been brought here. An attempt has also been made to show some of the publications of the ASSOCIATION and their development; as, for instance, the National Formulary and Pharmaceutical Recipe Book, the YEAR BOOK, the JOURNAL, etc. It is a matter of interest to the members to know that the Collective Index covering the years 1903–1925 of the PROCEEDINGS and the YEAR BOOKS, has been completed and can now be purchased.

In the exhibit shown here, there is also a collection of photographs and a number of albums. We also have several boxes of badges collected by Dr. and Mrs. Whelpley during their attendance at state and national meetings. Also, from the same source, a number of boxes of lantern slides, used in the illustrated lectures by Dr. Whelpley; many of them retouched in color by Mrs. Whelpley. Also a box of slides from Mr. R. S. Lehman showing his collection of patent and proprietary medicine stamps. We also have clippings and tributes to Dr. C. S. N. Hallberg and a set of newspaper clippings from the Nashville meeting of the AMERICAN PHARMACEUTICAL ASSOCIATION, at which time we had very fine publicity from the press.

The Historian hopes that you will look at these exhibits of books and other historical items, and if there are questions to be asked he will gladly answer them.

One of the purposes of making this collection, aside from the fact that the ASSOCIATION is meeting in Baltimore and makes the exhibit possible, is that individuals will be persuaded to donate single copies of historical value, or historical items to the ASSOCIATION. One book or several; one item or more have comparatively little value to the individual and may become lost; whereas, if contributed to the ASSOCIATION they add to the collection. There are others who will want to donate complete libraries, at least as far as works bearing on pharmacy are concerned, and of course such donations will be greatly appreciated. The desire is to make all departments of the American Institute of Pharmacy service propositions. A large number will benefit through these collections, and the service departments in general.

The Historian may also be pardoned in expressing the hope that the word will be passed along so that endowments may be provided in carrying on the work of the ASSOCIATION, in these several divisions. A year or more ago the members of the Press in Dallas, Texas, formulated an outline of endowment for the benefit of the city of Dallas and for the institutions of Dallas. The idea has met with considerable favor and already a number of endowment provisions have come to light in the wills of citizens. It may be that such a plan will be of service to the ASSOCIATION and the thought is here offered, because it may interest the members.

Each year the Historian is called upon to record the passing of esteemed members. A list of them is herewith submitted of those who have died since our meeting in Rapid City.

Frederick William Archer; Dr. Heinrich Beckurts; Frank H. Carter; Wm. C. Dambach; Herbert Clifton Easterday; Emil Adolph Gessner; Thomas H. Gilbert; Henry Brooke Gilpin; Edward Preston Holloway; Joseph Jacobs; Albert Koehler; Lucien E. Lyons; Harry Beckwith Mason; Emerson Romeo Miller; George T. Riefflin; Frederick Wm. Schoonmaker; Martin H. Smith; Wm. George Ungerer; Philip Henry Utech; Edward F. Wagener; Joseph L. Weil; Charles Augustine Wolf.

Let us, as a tribute to the memory of them, stand a moment in silence. A sketch of most of these members has appeared in the JOURNAL.

History of American Pharmacy.

In 1923 Chairman Clyde L. Eddy of the Section on Historical Pharmacy announced that arrangements had been made to write the history of American Pharmacy as part of the program of the Section on Historical Pharmacy. The subjects announced at that time were as follows:

"Pharmaceutical Education," by W. F. Rudd; "Pharmacy Laws in America," by H. C. Christensen; "Pharmaceutical Associations," by J. G. Beard; "The Practice of Pharmacy in Retail Stores," by R. S. Lehman; "Commercial Pharmacy," by Harry S. Noel; "Federal Laws Affecting Pharmacy," by Jacob Diner; "The Pharmacopœias and National Formulary," by E. F. Cook; "Biographical Sketches," by Caswell A. Mayo; "Manufacturing Pharmacy," by A. R. L. Dohme; "Wholesale Distribution," by C. H. Waterbury; "Pharmaceutical Journalism," by Francis B. Hays.

At the closing session of the Asheville meeting, Dr. A. R. L. Dohme in speaking of the work undertaken by the Section on Historical Pharmacy said that this is of transcendental importance, for which the help of all members and of all pharmacists is needed. It requires cooperation. He contended that this would be a helpful factor in bringing about a rightful recognition of pharmacy by the public, the officers of state and national governments. He said further that the work undertaken will be published as a historical volume. It has been commenced under the direction of Chairman Clyde L. Eddy with eleven collaborators. Probably none of them, Dr. Dohme said, fully realized the importance of the undertaking until they came here and found out what their associates had been doing. He said further a history of American Pharmacy is needed and this effort represents one of the most worthy and important undertakings of the AMERICAN PHARMACEUTICAL ASSOCIATION.

At the fifth Council meeting of the Asheville meeting, it was moved and carried that a special contribution of $100.00 be made for the Section on Historical Pharmacy to carry on the work under way in the preparation of the History of American Pharmacy.

As Chairman of the Section on Historical Pharmacy at the same meeting, Clyde Eddy summarized the work that had been accomplished on American Pharmacy, and the chapter by Francis B. Hays on "Pharmaceutical Journalism" was read in part. He said further that it occurred to him that the Section ought to devote a year at least to the completion of a history of American Pharmacy, and that he communicated with a number of pharmacists in various branches of the profession and asked them to collaborate in the writing of such a record of events. For convenience the subject was divided into eleven chapters, as has already been stated. He reported that much work had been done and that four of the chapters have been completed and turned over to him, and preliminary reports have been made on other chapters. He therefore recommended that the Section continue the work during the ensuing year. In concluding his address Chairman Eddy said that the work as projected will bring an up-to-date history of pharmacy to the profession. It will show pharmacy in its infancy, the first manufactury, the first colleges, the gradual growth of the idea that pharmacy should be qualified professionally. It will trace

the growth of the prerequisite movement, the spirit of commercialism, the evolution of pharmacy laws and trace step by step the history of pharmacy in the United States. At the same meeting it was voted to enlarge the scope of the work to include a history of pharmacy in the Government service.

At the meeting in Buffalo, Chairman Eddy stated that the principal work of the Section on Historical Pharmacy for the year was a discussion of the chapters that had been completed of the History of American Pharmacy. Five or six of the chapters had been presented in the preliminary draft and reports were made by some of the other officers. On suggestion of Chairman Eddy the entire editorial board of this proposed history was constituted a committee to carry on the work, which will be continued until the history is completed.

Reporting further, Chairman Eddy said that the work of the first year was largely preliminary, and that at the next ASSOCIATION meeting three or four completed first drafts of chapters were presented; among these were "Pharmaceutical Education," "Practical Pharmacy," "Manufacturing Pharmacy," and "Pharmaceutical Journalism." These had been discussed by the Section and some would be revised or re-written by consultation with other authors and authorities. The work of the preceding year had been continued along similar lines. At the Asheville meeting two new chapters were added and one of the authors resigned and this vacancy had been filled. During the year Chairman Cook and Chairman Scoville completed their first drafts of the chapters on the U. S. P. and N. F. He stated that while it was his hope that the history would be completed in 1927 it must be correctly written even if it required ten years for completion. Preliminary reports were presented on Federal laws, practical pharmacy, commercial pharmacy, wholesale distribution and biographical sketches. Quite a number participated in a discussion of the project at this meeting; the substance was that great care should be exercised in having the history authentic.

At the Des Moines meeting Editor Clyde L. Eddy reported on the progress made on the history of American Pharmacy. A number of the contributors reported, followed by discussion. Dr. Edward Kremers said he was greatly pleased when he learned that the history of American Pharmacy was to be written but dumbfounded when it was stated that it would be completed in a year or two.

At the Philadelphia meeting, Editor Clyde L. Eddy reported that progress was being made in the history of American Pharmacy.

The Historian said in his report that we can rest assured that the work so well begun will be carried forward to completion so that as time goes on others can add to the records. The important thing is to lay the foundation carefully.

There was no report at the St. Louis meeting.

At the Portland meeting a letter was read from Chairman Clyde L. Eddy of the Committee on the History of Pharmacy.

"*To the Members of the Historical Section of the American Pharmaceutical Association:*

"I am pleased to submit herewith my report as Chairman of the Special Committee on the History of American Pharmacy of the Historical Section.

"I proposed some years ago that the Section on Historical Pharmacy, through the collaboration of a selected group of its members, prepare a history of American Pharmacy. I suggested that this proposed history be divided into eleven chapters: (The number increased to fourteen.)

"Introductory Chapter; History of Pharmaceutical Education; Pharmacy Laws in America; Pharmaceutical Associations; The Practice of Pharmacy in Retail Stores; The Development of Commercial Pharmacy; Federal Laws Affecting Pharmacy; The United States Pharmacopœia; The National Formulary; Biographical Sketches of Outstanding Members of the Profession; History of Manufacturing Pharmacy; The Development of Wholesale Distribution; The History of Pharmaceutical Journalism; Pharmacy in the U. S. Army, Navy and Public Health Service.

"I am pleased to submit herewith completed first drafts of the following chapters: 'U. S. Pharmacopœia,' by E. Fullerton Cook; 'Pharmaceutical Journalism,' by Francis B. Hays; 'Pharmaceutical Education,' by W. F. Rudd; 'The National Formulary,' by Wilbur L. Scoville; 'The Practice of Pharmacy in Retail Stores,' by Robert S. Lehman; 'Manufacturing Pharmacy,' by A. R. L. Dohme."

It was voted to have Mr. Eddy continue as Chairman of the Committee.

There was no report at the Rapid City meeting. A letter had been addressed by Mr. Eddy to the office of the ASSOCIATION, which did not reach there in time and therefore no report of it was made at the Rapid City meeting. The letter follows:

"I very much regret that I have been unable to follow up the proposed history of American Pharmacy. The time I suggested this history some years ago I was editing the *Druggists Circular*. I had more time and thought then that I certainly should be able to finish what I started. It is clear to me now, however, that I cannot follow through as I should like to. I regret very much having to withdraw from this work, but I have done nothing on it for two years and see no possibility of working on it in the future.

"Will you please accept my sincere regret and permit me to resign from this Committee?"

This letter was duly acknowledged and regret expressed that Editor Eddy did not feel he had the time to continue the work so well begun.

On November 7th the following letter was received from Mr. Eddy:

"Under separate cover I am sending you the material that was prepared by various members of the A. PH. A. while I was Chairman of the Committee on History of American Pharmacy. It is very certain that I shall not be able to complete this work and I should like to turn the material over to you."

The letter was replied to by the Historian as follows:

"I certainly am very sorry that you find it impossible to continue the work of the Committee on the History of Pharmacy and this letter is to acknowledge the several pieces of matter which relate to the work which you have so well begun, and I really am sorry that you could not see your way clear to finish it. No doubt some one will be found to complete this work, but it may require a longer time than at first anticipated and possibly not until we are better situated in the Headquarters Building, but that is simply an expression of my own."

The contributions which were turned over by Mr. Eddy are in the Historian's hands. He feels that this work so well begun should be continued and again expresses regret that Mr. Eddy has concluded that he does not have the time to complete the work. In the opinion of the Historian, it would be well to have those who expressed their willingness to aid in the compilation of the history to complete their parts as promptly as their time will permit. If necessary, further contributors should be invited to share in this work, and in due time, when the chapters are ready, these should be edited and prepared for publication. This work can, of course, be done better when the office accommodations of the ASSOCIATION are equipped in the Headquarters Building.

After closing his report, the Historian asked that a vote of thanks be given to Mrs. Albert Schneider for her contributions referred to in the Historian's report and also to Mrs. Frank H. Carter and Miss Laura H. Hartman. It was so voted.

The Historian also referred to an inadvertent omission of a paper from the program entitled "Dr. William Brown, Revolutionary Patriot, the Physician General, Pioneer, Author of the First American Pharmacopœia Published in 1778," by Lyman F. Kebler and Bessie W. (née Brown) Gahn, great-great-great grand-daughter of Dr. Brown.

The Historian also stated that Dr. Kebler had referred to an oil painting of Dr. Brown which might possibly be obtained from members of the family. The Historian expressed his regret because of the omission.

He commented further on the work so well begun on the History of American Pharmacy. It seemed to be the general expression that this work could be better completed after the ASSOCIATION is located in the Headquarters Building at Washington.

Chairman George D. Beal suggested that an earlier election of the officers of the Section be held next year; that is, that the officers be elected prior to the reading of papers.

J. G. Beard stated that Miss Alice Noble had prepared an historical sketch of the North Carolina Pharmaceutical Association, but that she could not be present at this meeting and he, therefore, requested that the paper be read by title. The motion was seconded and carried.

Dr. H. C. Wood, Jr., was unable to be present and it was suggested that his paper entitled "History of the U. S. Dispensatory" be read by title and that, complying with his request, the paper be returned to him for minor revisions before publication.

W. L. Scoville read excerpts from his paper entitled "History of the National Formulary."

He asked that the paper be returned to him so that it might be brought up-to-date. The request was granted.

The paper entitled "History of the Pharmaceutical Recipe Book" was presented by Chairman J. Leon Lascoff. He commented on the first edition stating that it had been well received and that as soon as possible a revision of the book should be started. He displayed a comprehensive index of the Recipe Book and also various Recipe Books of other countries. A complete set of manuscript proof pages, rough proofs and revised proofs, leading up to the completion of the book, were exhibited, in connection with the historical display near the entrance to the room in which the sessions were being held. In the historical display there were more than one hundred books, largely formularies, dispensatories and pharmacopœias, which were exhibited for the purpose of informing the members relative to the nucleus of the historical library to be placed in the building at Washington. In the collection exhibited were the proof pages of the First U. S. Pharmacopœia by Dr. Lyman Spalding.

Robert J. Ruth read parts of his paper on "History of Pharmacy Week." The paper was received and Chairman Ruth received the thanks of the Section.

Secretary J. T. Lloyd referred to the comments of the paper by Dr. Lyman F. Kebler and Mrs. Gahn. Dr. Kebler stated that the paper was not complete but would be completed. He exhibited a photographic copy of the oil painting which has already been referred to of Dr. Brown and he also referred to the copies of this pharmacopœia in the Surgeon General's Library and in possession of the Heinitsch family and exhibited a copy of a letter written by Dr. Brown to General Washington.

It was moved that the paper be received and the hope expressed that it will soon be ready for publication. The desire was also expressed that every effort be made to secure the oil painting and that it be placed in the Headquarters of the A. Ph. A. at Washington.

Dr. Edward Kremers stated that while a student in Philadelphia he learned from Prof. John M. Maisch that a copy of the second edition of the Pharmacopœia prepared by Dr. Brown was in possession of the Heinitsch family in Lancaster. This was re-published in the *American Journal of Pharmacy*. Ten years ago he had visited in Lititz and was in the house in which Dr. Brown wrote his pharmacopœia (the Moravian Brothers House). He referred to the difficulty of securing accurate historical information and was pleased with the work undertaken by Dr. Kebler.

A paper on "The U. S. National Museum Pharmaceutical Collection, and Its Aims," by Charles Whitebread, was read by title.

Louis Wait Rising presented his paper on "Claudius Galen." It was received for publication.

The paper by John Uri Lloyd on "History of Hamamelis Virginica" was presented in abstract by Secretary J. T. Lloyd.

Mortimer Bye read a paper on "A Pioneer Pharmacist, Wm. S. Merrell" prepared by Charles G. Merrell. It was received.

A paper by B. L. Maltbie, "A Half Century of Progress in Pharmacy," was read by title.

Chairman Beal appointed the Committee on Nominations with Dr. Edward Kremers as Chairman.

The First Session of the Section on Historical Pharmacy was then adjourned.

SECOND SESSION.

The Second Session of the Section on Historical Pharmacy was called to order by Chairman Beal at 9:00 A.M., May 8th. The report of the Committee on Nominations was presented by Chairman Edward Kremers, the nominees being as follows:

Chairman, J. T. Lloyd, Cincinnati, Ohio; *Secretary*, L. E. Warren, Washington, D. C.; *Delegate to the House of Delegates*, George D. Beal, Pittsburgh, Pa.; *Historian*, E. G. Eberle, Baltimore, Md.

It was moved and seconded that the nominees be elected officers for the ensuing year. This was carried.

The reading of papers was continued.

"O. Henry and Pharmacy," by Charles H. and Millicent R. LaWall.

Edward Kremers said he was glad that after reading so much about O. Henry we had an authoritative expression on the subject. The paper was received for publication.

"Ex-Presidents of the A. PH. A. from Baltimore," by David M. R. Culbreth.

Dr. Edward Kremers introduced Mr. Wellcome, of London, a member of the ASSOCIATION for more than fifty years.

Mr. Wellcome said he had never listened to finer word pictures, physical and mental, as have been presented at this meeting; that he had been a life member of the ASSOCIATION for many years. Nothing had given him greater delight than to witness the interest displayed here, and he was certain that the members would be well rewarded for their interest. As a student, in Philadelphia, he had searched museums in Philadelphia, New York and elsewhere and, practically nothing of any real historical interest relating to pharmacy and medicine rewarded his search. He had started a collection when a student and continued it after he went to England. He devoted much time in searching for early manuscripts, prints and books related to various branches of the science to build up a collection for educational purposes. In 1913, he was invited to open his collection as a museum. He hesitated, because of the difficulty in getting a suitable building, but finally secured one and the scheme or plan had proved a success. He spoke further of the suspension of activities of the museum during the War and of his efforts to re-establish it.

A personal expression of appreciation was made by Chairman Beal.

Charles H. LaWall said that while in Great Britain with Mrs. LaWall, they had received the finest inspiration by a visit to the Wellcome Museum. It has been arranged by a genius, not like a museum of the usual type; the purpose is educational.

A paper by F. B. Kilmer—"The Search for the Active Principles in the Narcotic Solanums," was read by title.

L. E. Warren was in attendance at another Section meeting, therefore, his paper, "Note on an Ancient Poisonous Plant of Asia Minor," was read by title.

A paper by R. D. Bienfang, "Entries of Pharmaceutical Interest from the Note Book of B. Arnold, Druggist, Book Seller, etc., from London," was read by title; also a paper by Lieut. Commander Louis H. Roddis on "Karl Wilhelm Scheele, the Apothecary and Scientist of the 18th Century, Sweden."

Chairman Beal said that the symposium to-day is, in some ways, of more personal interest; at least, of more interest to the members here present, because, while they are well acquainted with those who are doing so much at the present time in the revision of the dispensatories, formularies, recipe books, many of the names of those who have been connected with pharmacopœial work are more of tradition than personal knowledge. The papers of the symposium, not heretofore read were presented as follows:

W. O. Richtman presented Dr. Edward Kremer's paper, "First Revision, New York, Dr. Ives; Philadelphia, Dr. Hewson."

Arno Viehoever, "Second and Third Revisions," Dr. George B. Wood.

Charles H. LaWall, "Fourth and Fifth Revisions," Dr. Franklin Bache and Dr. Joseph Carson.

Virgil Coblentz, "Sixth, Seventh and Eighth Revisions," Dr. Charles Rice.

Ivor Griffith, "Ninth Revision," Joseph P. Remington.

Edward Kremers had previously referred to his paper, "Alexander Nicolaus Scherer," and now presented another paper, "A Century of the U. S. Pharmacopœia," illustrated by charts. This concluded the reading of the papers; they were received for publication.

The installation of the officers of the ensuing year was announced, and Chairman George D. Beal thanked the members for their coöperation and participation in the program. He expressed the hope that they would repeat their fine efforts for Chairman J. T. Lloyd next year.

The Final Session of the Section on Historical Pharmacy was then adjourned.

CONFERENCE OF PHARMACEUTICAL ASSOCIATION SECRETARIES.

The First Session of the Conference of Pharmaceutical Association Secretaries was convened by President W. Bruce Philip, at 9:00 P.M., May 8th. He announced that there were 17 secretaries in attendance at the convention, but some of them were engaged in other meetings. J. G. Beard presided during the reading of the President's address, it follows:

PRESIDENT'S ADDRESS.

BY W. BRUCE PHILIP.

Fellow Secretaries—In spite of the problems of Pharmacy and the complaint of hard times during the last year, I feel optimistic as to the future.

After the War, we passed through a period of prosperity followed by a depression. We are now facing another change and the independent druggists having had their backs to the wall for some time, are now ready to put up a real fight to regain their own.

Inasmuch as any real fight in Pharmacy must be a fight of organization, and inasmuch as the office of the Secretary and the Secretary himself must be the center of every fight, this group of secretaries has the right to look forward to the coming year with a realization that they have much to do. If we do not shirk our responsibility, and I know we will not, the future of success of our Associations is assured.

Napoleon, it is said, stated that if we had no religion we should make one. The need for an aim or goal is imperative. So if our Conference has no fight to occupy its attention, I feel it would be necessary to start something if only in order to keep our officers, committees and members coöperating.

We have some good fights on right now; keeping the independence in our independent stores, the Capper-Kelly bill, and legislation improving our standing in the service of our Government.

You notice I said *our* Government, not *the* Government. As we think we are apt to act and we secretaries must never forget that our city, our state, our country are ours, and we have a right to fight so that our pharmaceutical association stands where we want it and is recognized as we want it.

The Conference of Pharmaceutical Association Secretaries is young. I had hoped that this year would show an exchange of information between all states and large city pharmaceutical and retail drug associations, so that by this meeting we would be able to discuss and constructively criticize our publicity part of all the Association programs. We should not blame anyone for lack of exchange of information during the past year. It should be a major lesson in our secretarial career. If secretaries will not or cannot respond when called upon, either we failed to sell the Conference of Pharmaceutical Association Secretaries, or else secretaries are as human as our members. I know this Conference is right. I know we are needed and can do much good. The question is, How?

Interchange ideas? Yes. But let us do more than send our monthly or weekly bulletins to other secretaries. Let us send that inside information, as our letters to collect our dues, our S. O. S. for members' help and letters to our political friends, copies of our blanks, forms and other bits of information that we give out at present to members only.

Just as the National Association of Boards of Pharmacy, and the American Association of Colleges of Pharmacy have built up their strong association, so can the Conference of Pharmaceutical Association Secretaries build up a powerful helpful group, for in our ranks are to be found the most practical, fearless men that pharmacy has produced. They are willing to work fearlessly for a better profession, a better drug store and for a better living condition for every one connected with pharmacy.

We should not overlook that one of the possibilities of this organization is to obtain through our fellow secretaries the best work they do and make that kind of work part of our own organization activities. In the same way we can learn how to eliminate or work out these problems that in the past have been so heart-breaking.

It has been to everyone's advantage to have the growth of our colleges and boards of pharmacy guided along coöperative constructive lines. The strong and vigorous help the weak and timid; the conservative hold back the radical.

Coöperation has standardized C. of C. dues to a minimum of $25.00 a year. We can by this organization, learn how we may not only ask, but receive enough dues to properly meet the expenses of our office. That can take care of association work. Too long have pharmaceutical groups imposed on the good nature and charity of the association's officers. Some of our associations have overcome this problem; let all of us learn how. The respect we desire for our pharma-

ceutical association will be given us when we demand enough money to do and pay for the thing we know must be done.

It is accurate information that proves worth while, not hearsay evidence, and our association is the one means of distributing this accurate, helpful information. Other channels of distribution tell only half-truths and may cause us and our associates to take steps that are unprofitable and at times dangerous.

We meet to-day and Friday afternoon. I intend to round table each subject. Everyone will be asked to contribute. Therefore, be brief and to the point. Each speaker will be allowed five minutes on each subject.

For the honor of being your President this year, I thank you. I have presided over many bodies, but you constitute a body of men that makes me feel humble when I consider the honor you have conferred upon me by allowing me to direct this meeting. Again—I thank you.

Vice-President Beard said the members had heard an address, characteristic of the President—short, breezy, meaty, and asked for action. The address was accepted.

The report of the Secretary-Treasurer was next in order; it follows:

REPORT OF THE SECRETARY-TREASURER.

BY CHARLES J. CLAYTON.

Baltimore, Maryland, May 8, 1930.

Mr. President and Members, Conference of Pharmaceutical Association Secretaries—I regret sincerely that my report must partake somewhat of the nature of an apology for having not only failed to accomplish very much of a constructive nature, but even worse—for having apparently failed even to make any great effort toward accomplishment. However, on the last indictment, the failure has been more apparent than real, and it is hoped that an alibi may be established, whereby any condemnatory convictions now existing in the minds of the members of the "Conference" may be mitigated by a plea of extenuating circumstances.

Chief among the fortuitous circumstances was the fact that because of having taken on a new connection with McKesson and Robbins, the former Secretary, Joseph G. Noh, was obliged to leave his former home at Harrisburg, Pa., suddenly and without sufficient time to gather up the records of the "Conference" and send them on to the writer. In consequence, it was not until about three weeks ago that your present Secretary came into possession of the list of members, the minutes of the 1929 meeting and other records which seemed needful to proper and orderly procedure.

In the meantime, President Philip had urged action, but your Secretary being somewhat lacking in initiative, continued to delay, in hope of receiving the records previously referred to, and which would have served as a guide. At last, however, in January, a mimeographed letter was sent to the secretaries of all state associations and of such local organizations as employ full-time secretaries, so far as the writer was cognizant of such organizations, the list addressed numbering 55.

In the letter, it was suggested that each secretary addressed supply the Secretary of the Conference with a sufficient number of copies of each piece of literature published so that such literature might in turn be forwarded to each of the members, each of whom might thus be made aware of the activities of each of the others and become acquainted with the variety of types of communications that are being sent to association members throughout the United States. There was enclosed with this letter, as examples, a number of pieces of literature, supplied by our President, Bruce Philip, and copies of a *News-Letter*, issued monthly by the Colorado Pharmacal Association.

In addition, these letters were accompanied by mimeographed forms of application for membership in the Conference, a number of which were returned, properly signed and accompanied by checks for five dollars each. Since I had no list of members, these applications were sent to all secretaries to whom the communications previously mentioned were sent, and in consequence, most of those who returned the applications and sent their checks were not new acquisitions to the Conference, but were old members renewing their allegiance. However, five new members resulted among the fifteen remittances received, but those were more than offset by the defection of nine, who had paid last year. It is probable that another letter would have

brought remittances from most of these, but due to various unforeseen occurrences, no other letter was sent out, except a last minute communication urging attendance at this meeting, which was supplemented by one from the President, to the same end.

You will, I believe, be interested in a statement relative to the associations which have participated in Conference activities during the three years of its existence as indicated by payment of dues by their respective secretaries. They are as follows:

1927–1928.	1928–1929.	1929–1930.
Alabama	Alabama	
Colorado	Colorado	Colorado
	Connecticut	Connecticut
	District Columbia	
	Idaho	
	Illinois	
Indiana		Indiana
		Kansas
		Kansas City
Kentucky	Kentucky	
Maryland	Maryland	Maryland
		Michigan
	Minnesota	
Missouri		
Montana		
New Jersey	New Jersey	
North Carolina	North Carolina	
		North Dakota
Pennsylvania	Pennsylvania	Pennsylvania
	Pittsburgh	
	San Francisco	San Francisco
South Carolina	South Carolina	South Carolina
		South Dakota
Texas	Texas	Texas
Utah	Utah	
Virginia	Virginia	Virginia
West Virginia	West Virginia	West Virginia

The above tabulation shows a total of 27 organizations that have been represented by payment of dues, of which 15 qualified in 1927–1928, 19 in 1928–1929 and 15 in 1929–1930. In addition, I find that the minutes of the Rapid City meeting in 1929, show the presence of the secretary of the Maine association; the records do not show receipt of dues at any time.

The five new members, who have paid dues for the first time during the past year, are

R. C. Reese, of the Kansas Pharmaceutical Association
H. J. Nie, of the Retail Druggists' Association of Kansas City
R. A. Turrel, of the Michigan Pharmaceutical Association
P. H. Costello, of the North Dakota Pharmaceutical Association
Rowland Jones, of the South Dakota Pharmaceutical Association.

No expenditures have been made out of the funds received, but some small obligations have been incurred, the exact amount of which I am unable to report at this time, because of lack of time to gather the data. However, it will not come to more than $10.00, I am quite certain. One hundred large clasp envelopes were purchased, of which about 60 were used in the first mailing. These cost $2.05, which was charged to the Colorado Pharmacal Association. About $3.00 has been expended for postage stamps and $2.00 for addressing and mailing. This has been advanced by myself. The Capitol College of Pharmacy has furnished and cut 3 mimeograph stencils from which the two letters and the subscription forms were run on paper furnished by the same institution. No payment is desired for the labor, nor is it asked for the stencils and paper, but it should be made never-the-less. In the recent mailing and in individual letters

written, Colorado Pharmacal Association stationery has been used, for which no compensation is desired, but it is my belief that the Conference should have some stationery of its own. Your President also should be reimbursed for postage and other expenses attached to sending out the communication referred to above.

Our financial report is as follows:

Received from	
Jos. G. Noh	$107.03
Roy C. Reese, Kansas	5.00
H. J. Nie, Kansas City	5.00
E. F. Kelly, Maryland	5.00
R. A. Turrell, Michigan	5.00
Frank M. Smith, South Carolina	5.00
P. H. Costello, North Dakota	5.00
J. B. Pilchard, Pennsylvania	5.00
W. Bruce Philip, San Francisco	5.00
Walter D. Adams, Texas	5.00
A. L. I. Winne, Virginia	5.00
J. Lester Hayman, West Virginia	5.00
Charles J. Clayton, Colorado	5.00
P. J. Garvin, Connecticut	5.00
F. V. McCullough, Indiana	5.00
Total	$177.03

In addition there has been received a voucher for $5.00, covering dues of Rowland Jones of South Dakota, which voucher has been forwarded to the Treasurer of the South Dakota Pharmaceutical Association for payment and check will probably have been received by the time I return home.

In conclusion, I repeat that this report is being made in an apologetic mood, and with a disposition to add that should I by any chance be entrusted with the secretarial duties for another year, I will endeavor to redeem any part of my reputation that may have been lost because of failure to perform in the manner you may have expected during the past year.

J. W. Slocum of Iowa referred to a payment of $5.00 made by Iowa Association and not recorded in the report.

President Philip said that there was some confusion as to credits; he believed the fiscal year and the calendar year should be the same. The suggestion was adopted and the report of the Secretary accepted.

Owing to the death of Mrs. Garvin, and the consequent absence of Chairman Garvin, no report of the Executive Committee was made.

ROUND TABLE DISCUSSION.

Question 1.—How can the benefits of the Conference be best extended to secretaries, who cannot be in attendance at the meetings?

J. G. Beard thought that the Conference had not been brought properly to the attention of the secretaries not in attendance. They get very little from the Press; there is no publicity committee. In his opinion the presidents of the Associations should be informed and the secretaries should be brought into the Conference, and then the organization can render them real service.

President Philip thought the point made by Secretary Beard was well taken. He said presidents, usually, change every year; secretaries are more-or-less permanent. The incoming presidents should be advised of the opportunities through the Conference.

J. B. Pilchard said that the idea advanced of meeting all the secretaries, listening to the different questions and ideas presented, are sources of great opportunities. He stated that he was a new secretary and could say very little.

J. W. Slocum said that he had been Secretary for six years of the Iowa Association. He had been enthusiastic about the organization of the Conference of secretaries. He could see great

benefits to be derived from these meetings. None of the secretaries had all the original ideas regarding successful conduct of associations. They have their individual methods but they can in many instances be improved upon. He said that he is a member of the State Board of Pharmacy and thought that the arrangement should be made whereby the meetings of the secretaries did not conflict with the meeting of other organizations.

Walter D. Adams said that personal contact is the thing. An exchange of ideas is needed and the secretaries who do not attend fail in getting the benefits they would have if they attended. He said a conference of association secretaries was in his mind before it was organized. In a large state like Texas it is necessary to have contact. At the state meeting they met at luncheon, bringing together the officers of the District associations and this brought them all into personal contact whereby they derived great benefits. He thought the first thing to do was to sell the idea embodied in the organization of the conference to the state associations and the state associations could well afford to pay the expenses of their secretaries to attend these meetings.

W. E. Bingham said that Mr. Adams had voiced his sentiments. He was one of the originators of this group in St Louis and his viewpoint was at that time that secretaries who do not attend the meetings should be urged to do so. If the presidents of the associations can be interested so they will bring the subject before the associations it will result in having a larger number of secretaries come to the Conference meetings.

J. Lester Hayman said that he was new in the work but was interested in the proposition. He said the attendance at the West Virginia state meeting had increased within the last three years.

Charles E. Nelson said he was not the secretary but President of the Indiana State Association. The matter of having the Secretary attend the conference had been taken up by the Executive Committee but this year the State association meeting followed very closely after that of the A. PH. A. and Secretary McCullough was of the opinion that he should stay at home and prepare for the State meeting, hence he was not in attendance.

Carl G. A. Harring was of the opinion that the greatest benefit to be derived from the Conference was through attendance at the meetings. The secretaries should be delegated to attend the Conference and those who are here present should sell the idea to their respective associations.

Charles T. Pickett said he was not a member. The conference idea had been brought to his attention by Mr. Noh several years ago but in his opinion the Executive Committee of the Pennsylvania Association did not fully realize the value to be derived from this Conference. He thought the reports of these meetings should be made in full to the secretaries of the state associations so they can understand what these meetings mean. In his opinion the minutes of the Conference should be published.

Joseph G. Noh stated by coming in late he missed two things: one a reference to the lateness in which his records had come to Secretary Clayton. He hoped during the year to assist in creating a larger interest in the Conference, making for a large attendance at Miami. He concurred with Mr. Nelson that the proceedings of the meeting should be sent out to State associations.

Charles J. Clayton held that nothing would take the place of contact, but believed sending the minutes to those who were not in attendance might be helpful, especially if accompanied by literature used by other secretaries.

Question No. 2—Scope of the Work Undertaken during the Past Year.

J. G. Beard remarked that nothing of unusual importance had been done in North Carolina during the past year. They had a very interesting program for their coming meeting.

Roy C. Reese said that when the Kansas Association was started there were 35 members representing 1100 drug stores in the state; a decision was to increase the membership to 1000, but this number had not been reached until last year. He referred to the organizations of the doctors and nurses, all much stronger, proportionately, than the organization of the druggists. The Association publishes a news booklet semi-monthly.

J. B. Pilchard stated that his work at the present time was largely in the field, calling on the druggists of the state, and this is resulting in a larger membership.

J. W. Slocum said that in Iowa there are about 4150 stores and the membership is 4100.

The druggists who pay registration renewals practically become members of the Association. In that way the Association receives $4000 in compulsory dues which would not be obtained by voluntary dues. The Association has entered on an advertising campaign, which has been quite successful; the city dailies are used once a month; the county paper once a month and also the *Farm Journal*. The end in view is to sell the idea of service of the drug store rendered to the community. The experience had been varied; some were pleased and others did not think the proposition worth while. An effort is now being made to organize tri-county Associations, who will hold quarterly meetings; this has been done in Illinois. The Kansas legislative program has been very satisfactory.

Walter D. Adams reported that legislation had been successful in Texas. The Association publishes a quarterly magazine which was sent to most of the state secretaries. The Association promotes durggists' group life insurance; the magazine produces profit. The Texas Association has about 3500 members yielding $7000.00 to the Association.

J. Lester Hayman said that a year ago he had sent out a letter requesting copies of recent pharmacy laws; the purpose was for study and as a result the West Virginia law was improved.

Carl E. Nelson stated that the State University had become interested in the drug store. A survey of about 300 stores including chains was made and this report is to be presented at the forthcoming State meeting. The Association worked in the interest of the pharmacy building, which will be dedicated during the annual meeting. The association owns the Indiana Pharmacist but it is not a large source of revenue. The Association is in very good shape and efforts are being made to bring about a closer coöperation with the medical profession.

James H. Allen advised that the Maine Association met only every two years and that this had been an off-year; the affairs of the Association are in good shape with a membership of 500.

Carl G. A. Harring remarked that Massachusetts was interested in two things at the present time, legislation and increasing the membership. It was hoped to increase the membership from about 30% to 60%.

Charles T. Pickett stated that the local association in Philadelphia had a membership of about 1200, and the dues are $12.00 annually. The Association has its own building and employs a secretary and stenographer; it renders service in every possible way. A large feature is insurance, including auto insurance. The outstanding idea is to be of service to the members in every possible way.

Wm. B. Day said that Illinois Association had a membership of about 2000. The Chicago Association issues a monthly publication. Efforts are being made to build up the membership and legislation constitutes a good part of the work. The Chicago Association has been helpful in many ways.

J. G. Noh stated that in his travels he had used every opportunity for the promotion of the Capper-Kelly Bill. He found that where the associations were strong the druggists were best protected.

Charles J. Clayton reported that monthly news letters are being issued and the State is being divided into districts. Much of the work related to legislation of different kinds.

W. Bruce Philip advised that the California congressmen have been persuaded to support the Capper-Kelly Bill. Coöperation is an outstanding effort, not only with officials of the drug-trade activities but also with the doctors. Much of the Secretary's office work is being done by telephone and daily letters are being sent out. The office endeavors in every possible way to serve the druggists. A weekly *bulletin* is issued and each week a page is given to the State association. Combination dues have been fixed at $21.00. Effort is made to entertain visitors and in every possible way the interests of the druggist are taken care of.

J. G. Noh thought that after the proceedings have been printed a summary should be made and publicity given in various publications. Reference was made to a statement at a national meeting where it is charged in an article that most State journals were based on graft. A resolution was passed instructing the Secretary to confer with the author of the statement questioning the accuracy of the information or statement.

Bernard A. Bialk of the Detroit Retail Druggists' Association said that he was sorry to learn that some of the associations did not find their publication profitable. The Detroit Association had found its publication profitable. Services are given somewhat like those of the Philadelphia Retail Druggists' Association.

The First Session of the Conference of Pharmaceutical Association Secretaries was then adjourned.

SECOND SESSION.

The Second Session of the Conference of Pharmaceutical Association Secretaries was called to order by President Philip at 2:00 P.M., May 9th. The first question proposed for the afternoon's discussion was *Voluntary vs. Compulsory Membership.*

Walter D. Adams stated that in Texas compulsory membership had operated for ten years. A statement had been made that this was unconstitutional, but the Attorney-General had approved it. Last year a new pharmacy law was passed and compulsory membership included in that—the dues are $3.00 and, in addition, the drug store license law of $2.00 goes to the Board of Pharmacy to enforce the law. The Texas Association maintains three scholarships for which there are always funds. Nine years ago, when Mr. Adams took charge, the Association was compelled to borrow $1000.00; now they have a cash balance of $10,000.00.

James H. Allen said that contributions had been received from the State Board and the question is now being discussed whether compulsory membership should be asked for.

J. G. Beard advised that in North Carolina the subject had been studied for a number of years. There are several questions that constitute problems in North Carolina. If compulsory membership is established it would mean that all who pay have a right to membership and the Association endeavors, as far as possible, to have qualified pharmacists as members of the organization, hence, to a certain extent the membership of North Carolina Association is restricted.

Carl G. A. Harring was opposed to compulsory membership.

Roy C. Reese agreed with Secretary Beard and said that clerks in Kansas pay $2.00 dues and store owners pay $5.00 to $25.00, and this supplies the Association with enough money for their purposes.

Wm. B. Day informed that the matter of compulsory membership had been discussed in Illinois, but not adopted; the Association dues are $3.00.

Charles T. Pickett said that the dues in Pennsylvania had been raised from $3.00 to $5.00. In the local association of Philadelphia voluntary membership was preferred, because the applicant must have endorsement.

Rowland Jones said that in South Dakota they had compulsory membership. There are about 800 members and the annual dues are $5.00; he would not like to reflect on what the income of the Association would be if compulsory membership did not exist. It is proposed to require a $3.00 license fee for all drug stores in the State and this will enable the Association to employ a full-time inspector.

Robert C. Wilson thought membership in an Association should be on a selective basis.

A. L. I. Winne stated that in Virginia a peculiar situation existed somewhat along the lines spoken of by Secretary Beard. He said the Association provided a scholarship in the Medical College of Virginia.

E. F. Kelly said that in Maryland the members were very much interested in the Conference and he congratulated the officers for the fine program. Compulsory membership was not favored in Maryland. The work of the Association is divided into several different groupings: 1, General Work of the Association as represented in its needs; 2, Education; 3, Law Enforcement and 4, Publicity. A careful inspection of the stores is made every thirty days and the State appropriates $10,000.00 a year for that work. The State also takes care of law enforcement.

The *Maryland Pharmacist* goes to every pharmacist in Maryland, Delaware and the District of Columbia. It pays its own expenses and produces revenue. Maryland supports the State University. The dues of the Association are available for general work. A step in progress is the creation of a reserve fund. Clerks pay $2.00 dues and proprietors $5.00.

Charles J. Clayton was not certain as to whether compulsory membership was constitutional; so far it had worked very well. Before the law was passed the Colorado Association had an attendance not exceeding 150 and now it has considerably more than double that number. Before the law went into effect the funds of the Association were very small and at the present time about $1800.00. He thought that if the Association employed a full-time man it would be better.

W. Bruce Philip said that in California there was a strong drug clerks' organization. Encouragement is given to local associations and every one is encouraged to hold membership in the

different bodies. The next question—*State Association Programs and Professional vs. Commercial.*

James H. Allen said that the Maine Association combined in their programs both commercial and professional subjects. At the coming convention arrangement has been made for three speakers. Round table discussions are part of the programs.

J. G. Beard reported that the North Carolina Association was planning to have a "commercial clinic" at which time only commercial matters would be handled; every speaker is limited in time. A half day is given to the Scientific Section; the average attendance at these meetings is only about thirty, while about four hundred attend the Commercial Section.

Carl G. A. Harring said that the programs of their annual meetings were handled by the Executive Committee. At each annual meeting one or more members of the faculty of the College of Pharmacy speak on a scientific subject and there are also talks by the members of the Board of Pharmacy and the Prohibition Administrator. Outside speakers are provided for; the commercial side usually receives better attention than the professional.

Roy C. Reese stated that they called on the Dean of the School of Pharmacy for a scientific discussion and they usually had state or federal officials to talk on legislation.

Charles T. Pickett said that at the Pennsylvania meeting the hours assigned are about equally divided between commercial and professional subjects.

Wm. B. Day stated that the greater part of the program of the Illinois Association was given to commercial and legislative subjects. The Chicago Retail Druggists' Association has taken up actively the matter of organizing publicity to induce physicians to prescribe more U. S. P. and N. F. preparations.

Rowland Jones said that the greater part of the program was given to commercial subjects at their association meetings. They always had speakers on scientific subjects.

Robert C. Wilson said that in the Georgia Association the principal subjects discussed were legislation and commercial topics.

Carl E. Nelson said that for a number of years the Indiana Association did not give much attention to the discussion of professional pharmacy; last year much time was given to it and the members were very much interested. Entertainments are provided and outside speakers invited.

J. W. Slocum said that while professional pharmacy receives consideration at the Iowa meetings, the greater part is devoted to commercial subjects.

Charles J. Clayton advised that the Colorado Association gave most of its time to discussion of commercial subjects.

W. Bruce Philip stated that California Association gave most of its time to the discussion of commercial problems.

J. Lester Hayman said that the entertainment program in their Association had been cut down; usually, a number of speakers from outside of the state are invited and in that way interest is added to the sessions. Last year Dusty Miller, an Ohio humorist, was scheduled as the first speaker and by 9 o'clock all seats were taken. Attendance prizes are given and at the last session a grand prize.

Carl G. A. Harring remarked that it had been difficult to hold the members for the third day, until a stag party was staged for the last night.

The next question for discussion was presented by President Philip—*What Services to Members Are Practicable?*

Walter D. Adams said that Texas Association provided group life insurance—a rate slightly above that the Association pays is charged—about 1000 members are carrying $2500 policies.

James H. Allen said the service given by their Association is largely in answering questions that concern the individual members.

J. G. Beard stated that North Carolina maintained an employment bureau; legislative efforts have been successful; the service of an attorney is helpful; district associations are being organized; literature is mailed to members and a fire insurance service is featured.

Carl G. A. Harring referred to Liability Group Insurance featured by Massachusetts; free legal advice is also given.

Wm. B. Day said that fully one-half of the Illinois members reside in Chicago and these have the excellent services given by the local association.

Rowland Jones stated that South Dakota has an employment bureau and aids in reporting and in making drug laws effective.

Robert C. Wilson said Georgia features group life insurance and keeps members informed on legislative matters.

A. L. I. Winne reported that legislation was the important activity of the Association.

Roy C. Reese stated that Kansas featured an employment service; buying and selling of stores, news service, warnings relative to imposters and interpretation of law requirements.

J. W. Slocum said Iowa features fire insurance, advertising campaigns; the *Northwestern Druggist* goes to every drug store in Iowa.

J. Lester Hayman stated that fire insurance was taken care of and service was given by the secretary's office in every way possible.

W. Bruce Philip reported service on "What can I do for you?" and endeavors to do it. Legal advice is given, leases are checked up; a wording of a lease permits removal of fixtures during life of lease. Letters are written for various purposes, chiefly for collection of debts; an employment service is maintained. The last question for discussion related to *Future Activities of the Conference.*

Walter D. Adams thought that sending the proceedings of the Conference to all absent secretaries would result in increased attendance. He favored round table discussions. The other speakers agreed with the foregoing; it was voiced that the program of proposed discussions should be submitted to secretaries before the meeting and opinions obtained from them relative to subjects. Those who expressed related opinions on the last topic for discussion were Messrs. Allen, Harring, Hayman, Day, Jones, Winne, Reese, Nelson and Slocum.

Secretary Clayton expressed his intention to send literature from his office to other secretaries and hoped for reciprocation.

President Philip stated that he would like to have an exhibit of publications, and that every month there would be an interchange of news and publicity matter. He asked support for the incoming officers.

The following were elected officers for the ensuing year: *President* J. G. Beard, Chapel Hill, N. C.; *First Vice-President*, Walter D. Adams, Forney, Texas; *Second Vice-President*, Charles J. Clayton, Denver, Colorado; *Secretary-Treasurer*, Carl G. A. Harring, Dorchester, Mass.; *Executive Committee*—P. J. Garvin, New Haven, Conn.; J. W. Slocum, Indianola, Ia.; Robert C. Wilson, Athens, Ga.; Rowland Jones, Gettysburg, So. Dak.; W. Bruce Philip, San Francisco, Calif.

After the installation of the officers, the Final Session of the Conference of Pharmaceutical Secretaries was adjourned.

Editor's Note: As stated at the beginning of the Minutes of the Sections, the transcript of the minutes of the Conference of Law Enforcement Officials has not been received from the reporter; however, Chairman Swain favored us with a copy of his address; it is printed here and should be read into the minutes of the Conference when printed.

THE CHAIRMAN'S ADDRESS OF THE CONFERENCE OF PHARMACEUTICAL LAW ENFORCEMENT OFFICIALS.*

BY R. L. SWAIN.

This Conference of Pharmaceutical Law Enforcement Officials was founded at the Rapid City convention of the AMERICAN PHARMACEUTICAL ASSOCIATION, and is but another expression of the enlightened policy which has marked the career of that distinguished body. Following out its traditional purpose of fostering the fundamental concepts of pharmacy, the A. PH. A., sensing the growing importance of the legal aspects of pharmaceutical work, was the stimulating influence which culminated in this effort. Careful observers throughout the country had come to the conclusion that the solution to many of the so-called pharmaceutical problems was to be found in a study of the relationship of the pharmacy laws to the people themselves. It was seen that the prestige and value of pharmacy were closely related to the attitude of the public service which it renders. A lax, loose and irresponsible legal status was clearly inconsistent either with public security or professional advancement. The close relationship between law enforcement and public security and between law enforcement and professional efficiency was clearly

* Baltimore meeting, A. PH. A., 1930. The minutes of the Conference will appear in a succeeding issue of the JOURNAL.

recognized. The idea that there is a public phase to the practice of pharmacy, and thus a great direct public responsibility upon the profession to meet an exacting standard had already taken definite form.

This conference was created to deal with the factors upon which the public attitude to pharmacy depends. The public attitude is reflective of public value, and this in turn comes only from the intrinsic nature of the service which the public receives. Obviously, the maintenance of satisfactory conditions, from the standpoint of the public and the profession, required that a serious and comprehensive effort be made to collect and correlate the provisions of the pharmacy laws of the several states; to study the relationship of the laws to the public welfare; to study closely the various agencies engaged in law enforcement and to coördinate and simplify enforcement procedure so that the progress made in one state might be an incentive to increased effort in others; to visualize the future of pharmacy in terms of its social value; to determine the basic importance of existing legislation as an aid to an adequate legislative program in the future.

The field of study to which the conference is dedicated is a most extensive and difficult one. The very magnitude of the project and the difficult work ahead emphasize the importance of the conference. It is indeed doubtful if any single movement in pharmacy in recent years has been devoted to a task of more far-reaching consequences or one which offers more in the way of successful outcome. It is certainly true that in dealing with such vital matters the conference is dealing with the most practical phases of pharmaceutical work. If it does no more than stimulate the civic consciousness of the profession, the conference will have amply justified itself.

In a work so broad as this it is well to recognize certain fundamental principles. First of all pharmacy laws are an expression on the part of the public that pharmacy concerns the public welfare; that the public health is involved in the requirements for pharmaceutical registration and in the excellence of the service which pharmacy provides. It may indeed be stated that the social value of pharmacy is its outstanding distinction. Any service which enters into the health and security of the people is indeed touched with a public interest. Thus the public aspects, the public value, the intrinsic public worth of pharmacy are subjects of profound significance. Public responsibilities impose a very exacting duty and one which cannot be met by anything less than determined and persistent effort. The real value of any service is measured by the manner and extent to which it stimulates public regard.

To-day there is no field of greater promise than that of interpreting all endeavor in the terms of its human value. This is a broad basic principle to which there are no exceptions. Sir William Osler sensed the same thought when he wrote: "There has been an enormous gain in a new outlook on the value of life. There are tones in human sentiment to-day which the ancients never heard, which, indeed, our fathers heard but faintly, and did not recognize their significance. There is no place for despondency and despair. Fight for the day when a man's life shall be more precious than gold, not as now when the cheapness of life is every day's tragedy." The same basic conception found expression in the political philosophy of Woodrow Wilson when he wrote: "Only free peoples can hold their purpose and their honor steady to a common end and prefer the interests of mankind to any narrow interest of their own." The same idea finds expression in the classical statement of Mr. Justice Holmes: "The life of the law has not been logic; it has been experience." Human values all!

Bringing this principle down to the sphere of this conference, let it be remembered that the ultimate value, the final worth, the true significance of law is its ability to enter into human experience. I find in this idea a great incentive to give our problems earnest study. The more vital the law is to public security, the more closely it touches the daily life of people, the more directly it enters into their experience, the greater its value to society. There are, in fact, many indications that in the future the actual test of legal restrictions and privileges will be their value in the experience of the people. There has been a long period of legislative experimentation, a period in which the ability to pass a law was sufficient justification for the act, a period during which no effort was made to avoid incompatibilities and discordant elements and to interpret statutes and human values as compensating or balancing equations. So definite is the trend to a more rational outlook that a distinguished jurist recently remarked: "It is true, I think, to-day in every department of the law that the social value of a rule has become a test of growing power and importance."

The functions of this conference are to make effective the pharmacy laws of the states in

such a manner that the protection legally contemplated shall indeed become an actuality. In applying the laws and studying the conditions which are thus brought about, the real public value will be ascertained. It will also be shown wherein the laws are deficient and wherein they fail to afford adequate protection. The work of the conference should produce data and statistics upon which to formulate a legislative program in keeping with public needs. The correlation of effort, which the conference makes possible, should make for greater uniformity in legislation throughout the country. It should be possible, from the work which this group has undertaken, to interpret pharmacy laws in terms of their social value and thus pave the way for a greater development of the profession and for a wider distribution of its benefits.

It is obvious, therefore, that the question of procedure is one requiring careful consideration. Just how the conference is to approach its duties, the manner in which it seeks to accomplish its objectives are matters directly related to the results to be obtained. The work should be placed on a practical basis. A practical study of existing conditions should be the immediate objective. There should be a closer study made of the field of pharmaceutical legislation as represented by the laws themselves as well as the opinions of the courts dealing with them. The means and methods adopted by the various agencies in actual enforcement work should be studied. From a full knowledge of existing conditions, the conference should foresee the improvement desired. Nothing but a responsible pharmaceutical service, arising from a stimulated pharmaceutical opinion, should meet the demands of this body. Increased professional prestige, a better service to the public health, a more secure commercial and economic position are the logical results to follow from efficient and persistent work.

Law enforcement as here conceived really enters into the experience of the people. It places the pharmaceutical profession in line with those who interpret things in terms of their social value. It is an undertaking worthy of our best efforts.

OFFICERS OF DISTRICT OF COLUMBIA RETAIL DRUGGISTS' ASSOCIATION.

The District of Columbia Retail Druggists' Association elected the following officers, at its recent annual meeting: *President*, Paul Pearson; *Vice-Presidents*, W. P. Herbst and A. V. Burdine; *Secretary-Treasurer*, Albert Gorsuch.

LOCAL COMMITTEE FOR N. A. R. D. MEETING.

The National Association of Retail Druggists will be held in Atlantic City, September 15th–20th, in Convention Hall. The following Local Committee has been appointed to have charge of the arrangements: *Executive:* Dudley G. Singer, director; Charles Schamach, assistant director; Prescott R. Loveland, secretary; Michael M. Titman, treasurer; Dean B. Crawford, Rees C. Roberts, Hugo Krause, Charles H. Jackson and Dr. Robert P. Fischelis. *Registration:* Charles H. Jackson, chairman. *Entertainment:* Hugo Krause, chairman. *Hotel:* Rees C. Roberts, chairman. *Transportation:* Charles B. B. Zeller, chairman. *Printing:* Alexander Jacobs, chairman. *Finance:* Kelso C. Ackley, chairman. *Exhibit:* Dean B. Crawford, chairman. *Reception:* Adolph Marquier, chairman. *Publicity:* Prescott R. Loveland, chairman. *Women's:* Mrs. Hugo Krause, chairman; Mrs. Dudley G. Singer, assistant chairman, and Miss Edith Schoefield, secretary.

PROPRIETARY ASSOCIATION OFFICERS.

The officers of the Proprietary Association were reëlected for the ensuing year, at its 48th annual meeting, held in Montreal. Foreign trade was one of the outstanding subjects of the discussions. The meeting was held in the Hotel Windsor, May 19th to 22nd. The Canadian Proprietary Association held its sessions during the same days.

MINNESOTA ASSOCIATION OFFICERS ELECTED BY MAIL BALLOT.

The following officers were chosen by Minnesota Pharmaceutical Association by mail ballot: *President*, Joseph Vadheim, Tyler; *First Vice-President*, Harry Iverson, St. Paul; *Second Vice-President*, George H. Countryman, Fergus Falls; *Third Vice-President*, Harriet D. James, Two Harbors. The *Treasurer* and the *Secretary* were reëlected.

PROCEEDINGS OF THE LOCAL BRANCHES

"All papers presented to the Association and Branches shall become the property of the Association with the understanding that they are not to be published in any other publication prior to their publication in those of the Association, except with the consent of the Council." —Part of Chapter VI, Article VI of the By-Laws.

ARTICLE III of Chapter VII reads: "The objects and aims of local branches of this Association shall be the same as set forth in ARTICLE I of the Constitution of this body, *and the acts of local branches shall in no way commit or bind this Association, and can only serve as recommendations to it.* And no local branch shall enact any article of Constitution or By-Law to conflict with the Constitution or By-Laws of this Association."

ARTICLE IV of Chapter VII reads: "Each local branch having not less than 50 dues-paid members of the Association, holding not less than six meetings annually with an attendance of not less than 9 members at each meeting, and the proceedings of which shall have been submitted to the JOURNAL for publication, may elect one representative to the House of Delegates."

Reports of the meetings of the Local Branches shall be mailed to the Editor on the day following the meeting, if possible. Minutes should be typewritten, with wide spaces between the lines. Care should be taken to give proper names correctly and manuscript should be signed by the reporter.

UNIVERSITY OF NORTH CAROLINA.

The 34th meeting of the University of North Carolina Branch of the AMERICAN PHARMACEUTICAL ASSOCIATION was held in the Pharmacy Hall, Thursday, April 3, 1930.

T. A. Libbus, student in the School of Pharmacy, presented a résumé of recent work which has been conducted on the chemistry of the "Secretions of Wasps," by E. G. Boysworth, a senior in the same school. A few interesting observations on the habits of the wasps were given, with insecticides which can be used against them.

P. L. Thomas, also a student in the school, presented an illustrated lecture on "Some Prominent Scientists Contributing to Medical Discoveries." Mr. Thomas presented slides from photographs of the men and gave a brief history of their lives.

The 35th meeting of the University of North Carolina Branch of the AMERICAN PHARMACEUTICAL ASSOCIATION was held in the Pharmacy Hall, Friday, April 11, 1930.

R. H. Hutchinson, secretary to the Antivenin Institute of America, delivered an address before an enthusiastic audience of about four hundred on "The Modern Treatment for Snake-Bite Poisoning." The lecture was illustrated with motion pictures and lantern slides.

Mr. Hutchinson confined his talk to the poisonous snakes of the United States and showed the characteristic habits, markings and geographical distribution. He concluded by giving the method of serum manufacture, administration and the general treatment for snake-bites. The lecture was attended by Boy Scouts and Officials from nearby cities and was well received. A vote of thanks was given to the speaker.

H. MC. DELLINGER, *Secretary.*

UNIVERSITY OF WASHINGTON.

The final meeting and annual dinner was held May 28th; 150 were present. As usual the entertainment was furnished by the students of the Branch with the exception of the speaker, Dr. J. H. Davidson, who presented an interesting talk on the professional pharmacist. Honor awards were announced by Acting Dean Lynn, as follows:

Loretta Denny fellowship, John Dingle; Arthur A. Denny fellowship, Charles Schwartz; A. PH. A. Branch Medal, H. A. Schroeder; Lehn & Fink Medal, J. Fernandez; Linton Memorial Plaque, K. W. Kraft; N. A. D. C. Life memberships, Mrs. J. W. Fletcher; Mrs. K. Gray; Miss L. Mozzone.

An amusing playlet written by Miss Radford for this occasion, entitled "The Court of Sanitation (2000 A.D.)" was presented by the following cast:

Policeman—Harold MacDonald
Charwoman—Mrs. Gray
Cough Addict—Leonilda Mozzone
Habitual Health Breaker—Kenneth Redman
Judge—Karl W. Kraft
Spoiled Child—Clementine Evans
Mother—Alice Hayden
Doctor—Joseph Fernandez

The prologue was read by Jack Steele.

The theme was built around the supposition that measles, coughs, etc., were criminal offenses, and murder, bigamy, etc., were mental disturbances. A very learned lecture on explosives by Professor Vacuum (Harold Schimpke) and his assistant, Professor Herr Tonic (Frank Squires), concluded the evening's program. During the lecture all safe explosives exploded and dangerous ones proved to be free from explosive action. During the evening's program the following were rendered:

Russian Songs by Estella Koozin.

Mirambiphone duets by Arthur Nelson and Lester Asher.

Songs by E. L. Terry and Sam Grant.

Piano solos by Lester Asher.

H. A. LANGENHAN, *Secretary.*

BULLETINS OF THE DRUG TRADE BUREAU OF PUBLIC INFORMATION.

The service which is being given by the Drug Trade Bureau of Public Information deserves the support of all druggists and pharmacists, to the end that the service may be improved and the Bureau be not hampered by lack of funds. It is a source of satisfaction that a large number of the state associations have passed resolutions commending the work of the Bureau and others have expressed appreciation by contributing toward the expenses of the work.

The *Director* of the News Service is Robert P. Fischelis, 106 N. Fifth St., Newark, N. J. The *Chairman* is Ambrose Hunsberger, 1600 Spruce St., Philadelphia, Pa.; *Secretary-Treasurer*, H. C. Christensen, 130 N. Wells St., Chicago, Ill.

Bulletin No. 10, issued April 18th, discusses the Williamson Bill, which has now become law. *Bulletin No. 11*, gave publicity to the membership of the A. PH. A. and affiliated bodies which have, since the issuance of the *Bulletin*, held their meetings. *Bulletin No. 12* gave publicity to the action taken at the meeting on the use of the words "druggists" and "pharmacists." The bulletin also refers to the unfortunate misuse of "drugs" when the term "narcotic" should be used. *Bulletin No. 13* relates to the Remington Honor Medal and its presentation to Dr. Edward Kremers of the University of Wisconsin. This presentation was part of the program at the A. PH. A. banquet. *Bulletin No. 14* reports the enactment of the Parker Bill which is of particular interest, because by it pharmacists in the Government service become eligible to commissioned rank on the same basis as medical officers. *Bulletin No. 15* calls attention to the use of the phrase, "Recommended by all Reliable Druggists" and voices the objection made by resolution at the meeting of the A. PH. A. *Bulletins No. 16* and *17* carry some of the high points of the address of President J. G. Beard of the American Association of Colleges of Pharmacy. The first relates to exchange professorships and the other seeks to arouse the interest of men with means to provide research funds and endowments for colleges of pharmacy. *Bulletin No. 18* brings to the attention of the public the need of including at least one member who is a pharmacist on state and local Boards of Health. This follows the lines of discussions at the meeting of the A. PH. A. *Bulletin No. 19*, issued July 11th, discusses the address of President George W. Colburn, Maryland Pharmaceutical Association, relating in part to methods followed in drug stores. It is pointed out that the independent drug store has advantages over the chain establishments and that the chains set examples in certain lines of business conduct. President Colburn's address emphasized professional activities and he urged pharmacists to be worthy of public confidence and trust.

THE BIRTHPLACE OF JOYCE KILMER DEDICATED TO HIS MEMORY.

Joyce Kilmer was the son of Dr. and Mrs. F. B. Kilmer; the latter has been a member of the AMERICAN PHARMACEUTICAL ASSOCIATION for many years. The old home has a number of interesting collections, not only of pictures and photographs, but also of furniture and copies of Joyce Kilmer's books in a number of editions; framed copies of "Trees" hang on the walls. On the occasion of the dedication, many leaders in civic and military life were present and voiced high appreciation and regard for their late companion.

Brigadier General Henry J. Riley spoke at length; he was followed by Mrs. Kilmer who expressed her pride as the mother of Joyce Kilmer. The dedication ceremonies were held at high noon and the consensus of the speakers was that the room should always remain a shrine of patriotism, of service and sacrifice, hallowed by sacred memories of a great life.

COMMITTEE REPORTS

NATIONAL LEGISLATION.

To the Members of the House of Delegates: As chairman of the Committee on Legislation I herewith respectfully submit the following report:

There has been much activity at Washington since the convening of the Special Session and the regular Session of the seventy-second Congress. During the Special Session many bills were introduced of interest to the drug trade, but nothing but Farm Relief and the Tariff were considered. The Farm Relief Bill was passed and has become the law of the land; the tariff is still being considered—it has passed both Houses of Congress and is now in Conference, some day an agreement, no doubt, will be reached; many articles coming within the purview of this bill will affect the drug trade; it would be impossible at this time to enumerate them, however, increased prices on many commodities may be looked for.

The Parker Bill—providing for re-organization of the Public Health Service—vetoed by President Coolidge, and re-introduced in a different form to overcome objections—contains a provision for commissioned pharmacists in this Service. The Bill is now a law. There are 36 pharmacists in the Service, grouped as pharmacists and senior pharmacists, the greater number of whom are eligible for commissions. The activities of the ASSOCIATION with the splendid coöperation of Surgeon General Cumming, recognizing the value of educated trained pharmacists in the Service, was sufficient to convince Congress of the necessity for such legislation.

For years pharmacists in the Government Service have received little or no recognition, they were classed as sub-professional. During the past winter when the Classification Board started a survey looking to re-classification of Government employees the question of the status of pharmacists was taken up with the proper representative of the Classification Board by Secretary Kelly and myself looking to have the pharmacists transferred to the professional class; later, we were granted a hearing by the Board and also filed a brief—President Dunning, Secretary Kelly, Dr. DuMez, Editor Eberle, Dr. Swain and myself were heard; we received every courtesy possible and the Board seemed to show much interest in the arguments presented. After a lapse of several weeks, I am pleased to report—that the Preliminary Class Specifications of positions in the Field Service, submitted by the Field Service Division of the Personnel Classification Board, to the various Government departments interested—that pharmacy is now placed in the professional and scientific service. Two classes are recognized, the pharmacists and the senior pharmacists are in the professional class and assistant pharmacists are classed as sub-professional. The minimum qualifications for pharmacists and senior pharmacists require graduation from a college of pharmacy meeting the requirements of the American Association of Colleges of Pharmacy. The salaries of each of these classes have not yet been determined. We feel confident that the decision of the Personnel Classification Board to place pharmacy in the professional and scientific service will be followed in the final report to Congress. Duties and responsibilities are carefully set forth in the report for both classes. We are, I am sure, proud and elated that we have been able to convince the Board of the necessity of such action and this change will accomplish much in placing pharmacy in the position wherein it properly belongs.

The success we have obtained by securing the enactment of the Parker Bill and the recognition given pharmacy by the Personnel Classification Board will be a material help in securing a pharmacy corps for the Army and convincing the Surgeon General of the Army of the necessity for such a corps. Our position to-day is much better than ever before and we believe we can use these accomplishments with telling effect to bring about a pharmacy corps in the U. S. Army in the near future; our next move will then be to secure legislation for the pharmacists in the U. S. Navy.

A bill having for its purpose the re-organization and re-classification of the Veterans' Bureau, has been given careful attention. President Dunning, Secretary Kelly, Dr. DuMez, Dr. Swain, and myself appeared before the House Committee having this bill in charge and presented arguments favoring the establishing of a pharmacy corps in the Veterans' Bureau; evidence was presented showing that the present service was in need of such improvement;

data were given to show that pharmacists in civil life, performing duties corresponding to those proposed for the officers of the pharmacy corps were no higher than the salaries now received in civil life, while the present salaries were much lower. Attention was drawn to the educational requirements now in effect, and the professional status of pharmacy, the requirements of our colleges of pharmacy and the Boards of Pharmacy and that unless recognition is given to pharmacy in the Bureau they would find that the Service would not be sufficiently attractive to induce present-day graduates of our schools and colleges of pharmacy to enter the Service. The members of the Committee gave us the closest attention and assured our representatives that the entire question of pharmaceutical service would receive careful study by the Committee and the officials of the Bureau, but as yet they have not made a report.

The Capper-Kelly Bill has been favorably reported out of Committee and the same is now on the calendar; it will be reached shortly and we are looking forward to favorable action by the House of Representatives; we should again go on record favoring this measure.

The Williamson Bill and several other bills providing for the transfer of the Prohibition Bureau from the Treasury Department to the Department of Justice have been considered by the House Judiciary Committee, and the House of Representatives has passed a bill in a modified form which is unsatisfactory to the drug interests; the bill is now in the Senate Committee, but so far no action has been taken. President Hoover in a special message has urged prompt action be taken by the Senate before adjournment.

The daily press recently published (April 27th) an article stating that the bill had been reported to the Senate; inquiry on April 30th, from good authority, elicited the fact that it had not been reported by the Judiciary Committee. The sub-committee of the Judiciary Committee have held two hearings, the drug trade was represented, heard and offered a number of suggestions and filed briefs covering the features to which they objected. What the final outcome will be is problematic; it is proposed to place the enforcement of the Volstead Act in the Department of Justice while the permissive part is to remain in the Treasury Department. Whatever happens, it is reasonably certain that the drug trade will have many worries for some time and until they learn the new language of the Attorney General. It is more than possible that new regulations will be promulgated for the enforcement of the amended Volstead Act.

Federal Narcotic License Bill.—Several bills proposing to amend the Harrison Narcotic Law have been introduced in Congress; hearings were granted on the final draft of a bill sponsored by Congressman Porter, by the Ways and Means Committee; opposition to many parts were made by the American Medical Association and representatives of the drug interests. April 7th the bill passed the House of Representatives and is now in the Committee of the Senate; the terms of the bill place the administration of the Harrison Narcotic Act, amendatory acts and the Narcotic Drugs Import and Export Act, in the hands of the Secretary of the Treasury with the appointment of a Commissioner of Narcotics—appointed by the President—completely in charge and divorcing the administration of all narcotic laws from the Prohibition Bureau.

A recent news article published by Universal Service, makes a statement that advertisements appeared in a Japanese trade paper and also in London, that a Japanese firm offered a large amount of cocaine to a buyer in the Orient; this shows a huge supply of narcotics. It further reported that a complete report of the above was forwarded to Narcotic headquarters in Washington from which Universal Service was permitted to quote. It further states that this is only one source of supply for illicit dope, much of which is smuggled into the United States.

It should be gratifying that the records of the Narcotic Bureau show less than 1 per cent of violations by the drug trade; I am, therefore, of the opinion and do recommend that the ASSOCIATION assist the Bureau in obtaining necessary legislation and at the same time give its whole-hearted support in any move whereby elicit traffic in narcotic drugs can be stopped. Officials of the Narcotic Bureau have advised me that the article above referred to was a reprint in a London journal from a Japanese trade paper as above stated, but they cannot vouch for it being official.

Respectfully submitted,

S. L. HILTON, *Chairman.*

EDITOR'S NOTE: The Williamson Bill has been passed, and it is regretted, that Congress adjourned without passing the Capper-Kelly Bill.

OBITUARY.

WILLIAM EVANS BARD.

The death of William E. Bard in Naples, Italy, was announced by cablegram on March 11th. Mr. Bard had been a member of the AMERICAN PHARMACEUTICAL ASSOCIATION since 1901. Some days later another notice apprised the relatives and friends of the death of Mrs. Bard. Mr. and Mrs. Bard were on a world tour and had sailed from San Francisco last November, making stops at various points in the far East before coming to Europe.

Mr. Bard was born in Sedalia, Mo., 1866. After graduating from the St. Louis College of Pharmacy he became a partner in the business of his father and, after the latter's death, the sole proprietor of two drug stores in his home town.

The deceased are survived by an only daughter, Mrs. Estill Bard McNamara of Sedalia; to her and other members of the family sympathy is expressed.

Mr. Bard had been eminently successful in business life and was highly regarded by his fellow-pharmacists. He had been an active member of the Missouri Pharmaceutical Association for many years. We are indebted to Mrs. Minnie Whitney, friend of the deceased, for notice of the deaths.

J. FULLER FRAMES.

J. Fuller Frames, a life member of the AMERICAN PHARMACEUTICAL ASSOCIATION, died on June 24, 1930, aged sixty-eight years. Mr. Frames had not been well for several days and his trouble becoming acute, surgical treatment was found necessary.

Mr. Frames was a native of Baltimore and had been prominent in drug-trade activities for many years. He succeeded his father as proprietor of a pharmacy at the corner of Gay and Aisquith Sts., and continued the business until the time of his death.

He was secretary of the Calvert Drug Co. for twenty years and had served on the Maryland Board of Pharmacy for thirty years. He was a member of the Maryland Pharmaceutical Association and local drug-trade bodies, among them the Baltimore Veteran Druggists' Association.

The funeral services were attended by members of the drug-trade activities, including a representative number of the Veteran druggists.

The deceased is survived by his widow and three children of a former marriage, to whom sympathy is expressed.

He was highly esteemed as a citizen and pharmacist, firm in his convictions but unafraid in performing duties, modest and always considerate of others.

HARVEY W. WILEY.

Dr. Harvey W. Wiley, of Washington, died June 30th, aged eighty-five years. He became a member of the AMERICAN PHARMACEUTICAL ASSOCIATION in 1902.

He was known to pharmacists, not only through the department in "Good Housekeeping Magazine," which he conducted, but for his earlier work that brought him in close touch with them; through his lectures in Chautauqua and Lyceum Courses and through his connection with the Bureau of Chemistry for nearly thirty years. It was during his incumbency that the Food & Drugs Act was enacted in which the United States Pharmacopœia and National Formulary are recognized as standards. In 1920 he was elected President of the United States Pharmacopœial Convention. His work on "Foods and Their Adulteration" is an important book of reference for food chemists.

Dr. Wiley was born in Kent, Indiana, October 18, 1844, and educated at Hanover, Indiana Medical College, and Harvard, and also studied in Europe.

Dr. Wiley was the recipient of the decoration of the French Legion of Honor and of other distinctions and of honorary degrees of a number of universities. He was a member of many scientific societies in the United States and abroad and served on several juries of award in world expositions and international congresses.

He attended several of the annual meetings of the AMERICAN PHARMACEUTICAL ASSOCIATION and presided over the 1920 Pharmacopœial Convention. He was present and visited with friends at the recent Convention; however, he was in a very enfeebled condition, and those who had known him in earlier years when the vigor of his health was pronounced, were saddened by the changed condition brought about by advancing years.

Dr. Wiley was an outstanding figure in the activities with which he was associated; he is survived by his widow and two sons, Harvey W., Jr., and John Preston Wiley. A sketch of

him is printed in the May JOURNAL A. PH. A., 1920, page 465.

GEORGE ZOELLER.

George Zoeller, member of the AMERICAN PHARMACEUTICAL ASSOCIATION since 1919, died April 4th, aged sixty-five years.

Mr. and Mrs. Zoeller had been on a trip to Europe the early part of this year. Mr. Zoeller had been in poor health for a number of months and had sold out of business before going abroad. He is survived by his widow, Elizabeth K. Zoeller, to whom sympathy is expressed.

STEPHEN G. PORTER.

Hon. Stephen G. Porter, congressman from Pennsylvania, died June 27th in Allegheny General Hospital, Pittsburgh. Mr. Porter became ill about two months ago aboard ship en route from London. He was an outstanding figure in regulating the control and distribution of habit-forming drugs. The last contribution to this work was the bill to create in the Treasury Department a Bureau of Narcotics. Comments on "Tentative Draft of the Porter Narcotic Bill" are printed in the February JOURNAL, page 165, and the Bill appears in the March number, page 307; many years of Congressman Porter's life were given to this important subject.

For nearly fifteen years, as ranking minority member and then as chairman of the House Foreign Affairs Committee, Mr. Porter placed his mark on many resolutions affecting our foreign relations.

CONGRESSES OF PHARMACY.

A Congress of Pharmacy will convene at the International Exposition in Liege from August 6th to 11th. The Congress is under the direction of the Faculty of Pharmacy at the University of Liege; the secretaries of the Congress are M. M. Bohet and Bremen.

The subjects which will be considered are: General and Analytical Chemistry, Pharmaceutical and Toxicological Chemistry, Pharmacognosy and Practical Pharmacy, Biologic and Bacteriologic Chemistry and that relating to Hygiene and Foods, Colonial Pharmacy, Subjects of Professional Interest, History, Legislation, etc. Quite a number of names familiar to pharmacists are on the Organization Committee.

The International Pharmaceutical Federation is meeting in Stockholm this month.

CHICAGO WORLD'S FAIR.

States are beginning to show growing interest in the World's Fair which is to be held in Chicago in 1933. Considerable attention, in fact a large part of the Chicago exhibition, will be devoted to the progress of science.

NATIONAL COLOR SOCIETY.

In connection with the U. S. Pharmacopœial Convention held in Washington, on May 13th and 14th, a Special Report has been drawn up on "Color Names in the United States Pharmacopœia and in the Arts, Sciences and Industries," edited by Prof. E. N. Gathercoal, School of Pharmacy, University of Illinois, Chicago. (Copies of this comprehensive report can be obtained for the nominal sum [illegible] each) from A. E. O. Munsell, 10 [illegible] Franklin St., Baltimore, Md.) A special exhibit of color instruments and color charts gave a graphic visual demonstration of the subjects treated in the above report [illegible] names.

[illegible] special meeting of all those interested [illegible] the part played by color in the three fields of Industry, Art and Science, Prof. Gathercoal reviewed the keen interest and the hearty coöperation that he had experienced in obtaining contributions to the report and to the color exhibit, and asked those present at the meeting whether or not there was a need for a society or convention concerned primarily with color in Industry, Art and Science. Receiving a unanimous answer in the affirmative, steps were taken for the formation of an organization committee to promote this new society. The meeting elected the following members to this organization committee:

Chairman, Royal B. Farnum, Providence, R. I.; F. N. Gathercoal, Chicago, Ill.; Charles Bittinger, Washington, D. C.; M. Rea Paul, New York City; Dean B. Judd, Washington, D. C.; Heber W. Youngken, Boston, Mass.; Raymond P. Ensign, Newark, N. J.; Margaret H. Rorke, New York City; H. V. Arny, New York City; Wm. D. Appel, Washington, D. C.; A. E. O. Munsell, Baltimore, Md.; Frank F. Rupert, Pittsburgh, Pa.

UNITED STATES CIVIL SERVICE EXAMINATION FOR BIOCHEMIST.

The United States Civil Service Commission announces the following open competitive examination: Applications for biochemist (pharmacologic) must be on file with the Civil Service Commission at Washington, D. C., not later than August 13, 1930.

The examination is to fill a vacancy in the National Institute of Health, Public Health Service, Washington, D. C., and vacancies occurring throughout the United States in positions requiring similar qualifications.

The entrance salaries range from $3800 to $4400 a year. Higher-salaried positions are filled through promotion.

The duties are to carry on, under general supervision, advanced biochemical researches, either individually or in coöperation with others, on animal and human organs, tissues and exudates, and on materials concerned with neoplasms.

A requirement is graduation from a college or university of recognized standing, such as to have included as a minimum the completion of 118 semester hours of work, 30 hours of which must have been in chemistry. In addition, applicants must have had at least five years' experience in research work in biological chemistry; provided that for each year lacking such experience there may be substituted one year of postgraduate training in a college or university of recognized standing with major work in biological chemistry, such substitution not to exceed three years.

Competitors will not be required to report for examination at any place, but will be rated on their education, training, experience, fitness and on publications or thesis.

Full information may be obtained from the United States Civil Service Commission, Washington, D. C., or the Secretary of the United States Civil Service Board of Examiners at the post office or customhouse in any city.

AMERICAN MEDICAL ASSOCIATION.

The scientific exhibits in connection with the annual session of the American Medical Association in Detroit received the approbation of the Association, and the executive in charge. Dr. Paul Nicholas Leech, received its congratulations upon the general excellence of the exhibit.

Dr. Edward Paul Judd, of the Mayo Clinic and University of Minnesota, was elected President of the Association. The next meeting will be held in Philadelphia.

Dr. C. W. Edmunds, in an address before the Section on Pharmacology and Therapeutics, criticized the teaching of pharmacology in medical schools. He said that the study frequently is in the hands of men primarily interested in other fields; as a result graduates are criticized for their lack of knowledge of drugs.

THE AMERICAN ASSOCIATION OF COLLEGES OF PHARMACY.

Abstract of the summary of the proceedings of the 1930 meeting. One hundred eight representatives from 47 schools in 33 states, the District of Columbia, and the Philippine Islands, were in attendance at the Baltimore meeting.

Dean Edward H. Niles read a memorial on the late Prof. Edward F. Wagener. The address of President J. G. Beard is printed in the May JOURNAL, beginning on page 503. The recommendations of the President were approved by the Committee on Resolutions and adopted by the Association. A change was made in Recommendation 3 by the insertion of the word "minimum;" that is, "all member schools shall adopt a minimum five day a week schedule of instruction."

The report of the Secretary-Treasurer showed cash on hand $6164.36. Chairman C. B. Jordan of the Executive Committee reported on the number of students and their preliminary training. There was a total of 3042 of entering students of whom 3012 were high school graduates and 32 special students; 480 of the number had previous college training. The interesting report dealt with the visits made to member colleges and outstanding events affecting pharmaceutical education. The Committee also recommended several changes in the constitution and by-laws of the Association. The summary deals further with reports of various committees.

The officers elected for the ensuing year are: *President*, Julius W. Sturmer, Philadelphia; *Vice-President*, Henry A. Langenhan, Seattle; *Secretary-Treasurer*, Zada M. Cooper, Iowa City; *Chairman of the Executive Committee*, Charles B. Jordan, Lafayette; Andrew G. DuMez and John G. Beard were elected members of the *Executive Committee* to serve for two years and Gordon L. Curry, of Louisville was elected member of the Syllabus Committee.

The speaker at the annual dinner was Dr. Neil E. Gordon who holds the chair of chemical education at Johns Hopkins University.

The program of the American Association of Colleges of Pharmacy is printed in the April issue, 1930. This reference is made for the purpose of naming the papers which were read at the Conferences of Teachers. At that time the program of the Conference of Teachers of Chemistry had not been completed. This Conference was presided over by Chairman Webster and the papers read were as follows:

"What Constitutes a Proper Foundation for the Study of Quantitative Organic Analysis," George D. Beal; "Scientific Remedies, Their Place in the Curricula of a School of Pharmacy," A. H. Clark; "A Pharmaceutical Application of Hydrogen-ion Concentration," John C. Krantz, Jr.

The program of the Conference of Teachers of Pharmaceutical Economics was not included in the program referred to. The Conference was presided over by Leonard O'Connell and the subjects discussed were "Transition Work in Commercial Pharmacy," by C. B. Jordan. "The Relation of Drug Stores to Population," by Edward Kremers; "Outside Speakers in Courses in Pharmaceutical Economics," by W. Bruce Philip; "Productive Method of Teaching Pharmaceutical Economics," R. T. Lakey.

The officers chosen for the ensuing year are: Chemistry, Loyd F. Harris, *Chairman;* John C. Bauer, *Secretary;* Pharmacy, Charles J. Fuhrmann, *Chairman;* Ralph E. Terry, *Vice-Chairman;* Wm. J. Husa, *Secretary;* Materia Medica, A. Richard Bliss, Jr., *Chairman;* F. J. Bacon, *Secretary;* Pharmaceutical Economics, C. Leonard O'Connell, *Chairman;* Howard C. Newton, *Secretary.*

PRIZE MEMBERSHIPS IN THE A. PH. A. BY COLLEGES OF PHARMACY.

The JOURNAL OF THE A. PH. A. will be pleased to print the names of the institutions of pharmacy awarding as prizes membership in the A. PH. A. The names of a few of those who have made such awards follows:

Massachusetts College of Pharmacy.—The *Pharmacy prize* offered by Prof. E. H. LaPierre, was awarded to G. Richard Tedgell; *Analytical Chemistry,* by Dean Bradley, to Carroll B. Gustafson; *Organic Chemistry,* by Treasurer Gammon, to Aldora A. Trainovich; *Materia Medica,* by President Glover, to Nathan Becker; *Commercial Pharmacy,* by Vice-President Ellis, to Raymond A. Dahill.

Pittsburgh College of Pharmacy.—*Pharmacognosy prize,* to B. Henrietta Harris; *Materia Medica,* to Tozia Drapiewski; *Pharmacy prize,* to Barnard Thompson; *Applied Pharmacy,* to Ida Denise De Santis; *Chemistry,* to Howard Paul Dolyak; *Inorganic Chemistry,* to Willard Hoyle; *Physiology,* to Tom Fairfull; *Pharmaceutical Economics,* to Carl George Setler.

Duquesne University School of Pharmacy.—*Pharmacy award,* by Prof. W. A. Jarrett, to George E. Nagle; *Materia Medica,* by Prof. Leslie B. Barrett, to Erwin Volkin; *Chemistry,* by Dean Hugh C. Muldoon, to Thomas B. Kirby.

Former Presidents of the A. PH. A., **Dean Henry H. Rusby** and **Dean-Elect, H. V. Arny,** of the College of Pharmacy of Columbia University, were elected honorary members of the Pharmaceutical Society of Great Britain.

Former President of the A. PH. A., **Theodore J. Bradley** will represent the AMERICAN PHARMACEUTICAL ASSOCIATION at the meeting of the Canadian Pharmaceutical Association, August 4th to 7th.

The Jesse W. Lazear Medal of Honor for Distinguished Self-Sacrifice for Humanity, will be the medal which will be awarded to those who risk life and health bravely that the cause of science may be advanced. This medal is named after the hero who, as a member of the famous Yellow Fever Commission, allowed an infected mosquito to bite him and give him a fatal case of the disease which was conquered through the information that this and similar heroic sacrifices gave to medical science.

President H. C. Christensen on his trip to continue meetings of western state associations stopped for a short visit in Nebraska, where he had lived during his younger years. The Kenesaw Progress (Nebraska) devoted a column of appreciation because of the visit.

The Massachusetts College of Pharmacy conferred the honorary degree of Doctor of Pharmacy upon **Irving P. Gammon** of Brookline, Mass., and **C. Herbert Packard** of East Boston, at their recent convention exercises.

Townes R. Leigh, Gainesville, Fla., and Robert C. Wilson, Athens, Ga., are associate editors of the *Southern Drug Journal.*

Editor's Note: The article in June JOURNAL, page 583, "The Prescription Business in Buffalo" was prepared and presented by Prof. Leon Monell. Inadvertently his name was omitted.

C. B. Johnson is now editor of the *Druggist*. The managing editor is **Claude L. Lawrence** and co-editors are **Charles E. Wilson,** Corinth, Miss., and **E. L. Hammond,** University of Mississippi, and **A. Richard Bliss, Jr.,** Memphis.

In writing of the Baltimore meeting of the A. PH. A., Associate Editor **Charles E. Wilson** reports in his "Personal Page," that "The AMERICAN PHARMACEUTICAL ASSOCIATION, 'the Grandfather of Pharmacy,' ran true to its form with a program that was well balanced, suggestive in spirit and extremely helpful to those who were interested."

"To the retail pharmacists everywhere, who think that the A. PH. A. is 'high brow' and that there is nothing of interest for the man who is in the retail game, let me say that they simply do not know what this organization is doing. They should attend one of its conventions and learn the truth. They would be increasing their ability along professional and commercial lines. They would better serve their trade and increase their project."

"The pharmacists of the South should rally to the cause of the A. PH. A. by becoming active members. They need the A. PH. A. more than the A. PH. A. needs them. The A. PH. A. has sponsored everything worth while for the best interests of pharmacy for seventy-eight years. It has fought for the maintenance of professional pharmacy through the dark periods when there was no shoulder to lean upon. Truly, it is the backbone of the professional side of pharmacy. Had it not been for its efforts we would be little more than mere venders of merchandise and on the same level with butchers, bakers and grocers."

The newly appointed head of the Department of Justice Prohibition Bureau, Colonel Amoss W. W. Woodcock, and his assistant, Howard T. Jones, were formally installed in their new positions July 1st. From the newspaper notices and his records the prohibition administrator is a man of high type and ability; in fact, there has been so much said about the appointee that he will have to measure high in order to meet the promises that have been made for him.

Dr. James M. Doran will be in charge of the Bureau of Industrial Alcohol of the Treasury Department. Attorney General Mitchell has made public a partial list of the deputy administrators under the new organization.

Leith S. Temperton and **Paul S. Pittenger** have been elected Vice-Presidents of Sharp & Dohme.

Secretary David A. Skinner of the U. S. Chamber of Commerce, is a graduate of the Detroit College of Pharmacy, 1898.

Hoffman-LaRoche have broken ground for a new building at Nutley, celebrating at the same time the first anniversary of their occupancy of their new building.

HISTORICAL QUESTIONNAIRE.

Otto Raubenheimer, 1341 Fulton St., Brooklyn, N. Y., has requested insertion of the following:

1. To what extent is History of Pharmacy taught in your College Course?
2. How many hours are devoted to this course?
3. Has your College a Museum for the preservation of Historical material?
4. Have you a Historical Collection and what does it consist of?
5. Is there a catalog or pamphlet published about this collection?

If so, am anxious to obtain same.

6. Do you know of any other Historical Pharmaceutical Collection—private or public—in the United States?

College..... Signed.....

OFFICERS OF STATE PHARMACEUTICAL ASSOCIATIONS.

All state pharmaceutical associations are on record, favorable for a price maintenance measure and, likewise, for a pharmacy corps in the Medical Department of the U. S. Army; most of those convening since the AMERICAN PHARMACEUTICAL ASSOCIATION meeting in Baltimore have embodied as presented, or in a modified form, resolutions adopted by the A. PH. A., printed on pages 522–526. Attempt has been made to confine the following reports to the election of officers and a few outstanding points but in preparing the reports at different times several of them, for one reason or another, have gone far beyond the limits set. It is hoped that secretaries will note the list of officers and send in corrections, if necessary.

ALABAMA.

The 48th annual convention of Alabama Pharmaceutical Association was held on board the steamship Cuba between Key West and Havana, Cuba. The Pharmaceutical Society of Havana entertained the members and the

Cuban pharmacists were most gracious in their attention.

The following officers were elected: *President*, Z. C. Lewis, Montgomery; *First Vice-President*, Paul Lantrik, Jasper; *Second Vice-President*, J. K. Haynie, Opeleka; *Treasurer*, N. H. Ward, Tuscaloosa; *Secretary*, W. E. Bingham.

The next annual meeting will be held at Montgomery in 1931.

ARKANSAS.

The 47th annual meeting of Arkansas Pharmaceutical Association was held in Hot Springs. President Max Daggett of Marian presided over the sessions.

The President for the ensuing year is W. Irl Brite.

Dr. Charles F. Caspari brought the greetings of the AMERICAN PHARMACEUTICAL ASSOCIATION and President Thomas Roach spoke for the National Association Retail Druggists.

The educational session followed a plan laid out by the *Southern Pharmaceutical Journal* and was voted a great success.

CALIFORNIA.

More than seven hundred attended the meeting of the California Association held at Pasadena. Among the speakers were President H. C. Christensen of the AMERICAN PHARMACEUTICAL ASSOCIATION and F. L. Newcomb, Secretary of the N. W. D. A. The key note of President Vossmeyer's address was embodied in his presentation of the value of associations.

President Christensen spoke of the activities of the A. PH. A. and of the transactions at the Baltimore meeting. He urged a larger membership from California.

A number of the resolutions adopted by the A. PH. A. were embodied in the resolutions of the state association. We note among others the one which urged advertisers to discontinue the use of the phrase, "Recommended by All Reliable Druggists."

The officers elected for the ensuing year are: *President*, Thomas J. Lanahan, San Francisco; *First Vice-President*, F. G. Wray, San Diego; *Second Vice-President*, Henry Gonzales, Oakland; *Third Vice-President*, Harvey A. Henry, Los Angeles; *Treasurer*, A. H. Vossmeyer, Los Angeles; *Secretary*, Roy S. Warnack, Los Angeles.

Del Monte was chosen for next year's convention.

COLORADO.

The meeting of the Colorado Pharmaceutical Association was held at Colorado Springs, June 1st–12th with a good attendance. Legislative matters were freely discussed.

The officers elected for the ensuing year are: *President*, Monte L. Powell, Denver; *First Vice-President*, David B. Frey, Colorado Springs; *Second Vice-President*, B. C. Lagerquist, La Junta; *Secretary*, Charles J. Clayton, Denver; *Treasurer*, Julius F. Ernest, Denver.

FLORIDA.

The 27th annual convention of Florida Pharmaceutical Association was held at Key West. On Saturday, following the business sessions, the members visited Havana, Cuba, where they were royally received by members of the National Pharmaceutical Association of Cuba.

The meeting in Key West was of particular interest because of the selection of Miami for the next annual meeting of the AMERICAN PHARMACEUTICAL ASSOCIATION. President Emrich paid tribute to Florida pharmacists who had been honored at the Baltimore and Washington conventions—President W. M. Hankins, of the National Association of Boards of Pharmacy, and Dr. Townes R. Leigh and William J. Husa who had been elected to the U. S. P. Revision Committee. He stressed the importance of coöperating with the A. PH. A. and urged activity of the Membership Committee in that connection.

Dr. James H. Beal spoke of the Baltimore meeting of the A. PH. A. He acquainted the members with the activities of the ASSOCIATION during nearly eighty years—its influence in shaping American pharmacy, and in these connections the value to be derived from the meeting in Florida. The comprehensive address dealt with the work accomplished by it and that being promoted under its direction. He outlined the form of its organization and referred to the related organizations and affiliated bodies which contributed to the annual sessions and influenced pharmacy and the drug-trade activities; to the publications of the ASSOCIATION and their helpfulness to pharmacists; among them, the JOURNAL, YEAR BOOK, National Formulary and the recent edition of the Index and the first edition of the Pharmaceutical Recipe Book.

President Hankins spoke of what the meeting meant to Florida. The reports of the officers were interesting and profitable contributions

to the Association proceedings. Among other speakers were Senator Malone, Secretary Haughton, of the Board of Pharmacy, Philip R. Wood, T. R. Leigh, G. H. Grommet and Don Evans. He who doubts the energy of Florida pharmacists needs only to be reminded of the work of the representatives in Baltimore by the contributions to the Section programs and the enthusiasm for a Florida meeting of the A. PH. A.

The officers elected for the ensuing year are: *President*, Harry W. Childs, St. Petersburg; *First Vice-President*, Milam Anderson, Lake Wales; *Second Vice-President*, R. Q. Richards, Ft. Myers; *Third Vice-President*, R. L. Spottswood, Key West; *Secretary Manager*, G. H. Grommet, Miami.

IDAHO.

The attendance at the Idaho Association which convened at Boise was up to the average. President Walker gave an account of national legislation and the successes accomplished, dwelling partly, in that respect, on the Parker Bill.

The following officers were elected: *President*, H. B. Whittlesley, Pocatello; *First Vice-President*, J. B. Ostrander, Wallace; *Second Vice-President*, Bert Caldwell, Twin Falls; *Secretary-Treasurer*, Herschel M. Cummins, Melba.

F. R. Peterson of Portland spoke of the legislative work in Congress and Donald Whitehead of the work of the state association in which pharmacists are interested. Mr. Whitehead is a former president and secretary of the Idaho Association and at the present time the speaker of the House in the Idaho Legislature. He urged broadmindedness and devotion to the public interests in political activities of the druggists.

Pocatello was chosen for the 1931 meeting.

LOUISIANA.

Louisiana Pharmaceutical Association has arranged for group life insurance for its members and is seeking amendments to the present pharmacy law. The work of the Association during the interim of the annual meetings is largely taken care of by *District Vice-Presidents*, among them are J. Marion Legendre, for Districts 1 and 2, New Orleans; Paul C. Eckels, for Districts 3 and 5, Crowley; J. A. Baucum, District 4, Haynesville; John W. Cullens, District 5, Monroe; Lester Dunlap, District 6, Baton Rouge; Leo C. Siess, District 8, Alexandria. C. R. Caldwell, Shreveport was elected *President* of the Association, and John E. Scott of New Orleans was reëlected *Secretary*.

MARYLAND.

The 48th annual meeting of Maryland Pharmaceutical Association was held at Ocean City, Md., with a large attendance. The members were saddened by the recent toll made by death among their fellows—one, that of beloved J. Fuller Frames during the meeting; the others who answered the call just prior to the meeting were Treasurer George P. Hetz, of Baltimore, and James P. Challenger, of Newcastle, Del. Appropriate resolutions of respect were adopted.

Few pharmaceutical associations can claim stronger friendship and interest of Governors than Maryland Pharmaceutical Association; Governor Ritchie is always responsive to the invitations from that organization. Having fulfilled the duties expected by the Governor and closely observed its professional responsibilities the Association has never been disappointed in his actions. His presence at the meetings is most encouraging and his expressions in a number of addresses relative to pharmacy have been commented on in this JOURNAL heretofore. This year again, Governor Ritchie was an honored guest and received the welcome as such, as well as that of an honored member.

President George W. Colburn's address was comprehensive; he recommended that the annual meetings alternate between the Eastern and Western Shores of Maryland; he favored closer contact with medical societies; spoke for support of pharmaceutical education; approval of the Capper-Kelly Bill, and strongly favored a pharmacy corps in the U. S. Army.

Among the addresses and papers of the meeting were "Constructive Work in Behalf of Pharmacy," by Ambrose Hunsberger; "Value of a Well-Equipped Pharmacy in a Modern Hospital," by Amelia Sonnenburg; "Displays That Sell," by Harold C. Kinnier; "Personal Experience with Drug Traffic," Thomas Armstrong; "Pharmacy's Place in Medicine," Robert P. Fischelis; "The Pharmacist Gets a Break," Robert J. Ruth; "The Attitude of Pharmacists to Mergers," L. M. Kantner, and others. In the Scientific Section, under the chairmanship of Dr. John C. Krantz, Jr., were contributions by William T. McCloskey, of the F. D. I. Administration, Washington, who

presented "Studies in Endocrines;" John C. Bauer, "Studies in Hypnotics," and "Studies in Carbohydrate Metabolism," by the Chairman. S. L. Hilton, of Washington, reported on the St. Louis Drug Survey; A. G. DuMez on the Pharmacopœial Convention and Glenn L. Jenkins on the revision of the National Formulary.

The officers elected for the ensuing year are: *President*, L. S. Williams, Baltimore; *First Vice-President*, William C. Spire, Mount Rainier; *Second Vice-President*, L. M. Kantner, Baltimore; *Third Vice-President*, L. C. Johnson, St. Michaels; *Secretary*, E. F. Kelly, Baltimore; *Treasurer*, Harry S. Harrison, Baltimore; *Editor, Maryland Pharmacist*, Robert L. Swain, Baltimore.

NEBRASKA.

Among the speakers at the Nebraska Pharmaceutical Association held in Omaha, June 3rd to 5th, were President H. C. Christensen of the A. PH. A., Denny Brann, former President of the N. A. R. D., Deans H. C. Newton, and Niels Mikkelsen.

President Smith C. Wilson gave a résumé of pharmaceutical and drug-trade activities during the past year. Nebraska Association will celebrate its 50th anniversary the next year and the meeting is to be held in Lincoln.

The officers elected are: *President*, M. E. Rasdal, Ogallala; *First Vice-President*, J. C. Thygeson, Nebraska City; *Second Vice-President*, W. E. James, Palmer; *Third Vice-President*, T. G. Slater, Hordville; *Fourth Vice-President*, Ora E. Copes, Auburn; *Fifth Vice-President*, L. W. Gorton, Omaha; *Secretary*, J. G. McBride, Lincoln; *Treasurer*, D. D. Adams. Stanley D. Young was elected delegate to the AMERICAN PHARMACEUTICAL ASSOCIATION.

NEW JERSEY PHARMACEUTICAL ASSOCIATION.

New Jersey Pharmaceutical Association held its sessions at Asbury Park, June 1st–13th. Among the speakers of the Convention were Dr. James M. Doran, who approved the way in which pharmacists had handled narcotics. Dean Fraser Metzger of Rutgers University spoke on "Education and Business." Other speakers were Wilmer Krusen and Robert J. Ruth. President Dudley Singer urged the return of show globes to the windows of pharmacies.

The officers elected for the ensuing year are: *President*, Charles Schumach, Paterson; *First Vice-President*, Wm. A. Chamberlain, Collingswood; *Second Vice-President*, Morris Gartenbert, Jersey City; *Secretary*, Prescott R. Loveland, Atlantic City; *Treasurer*, Charles A. McCloskey, Culver's Lake.

NEW MEXICO PHARMACEUTICAL ASSOCIATION.

The second annual meeting of the New Mexico Pharmaceutical Assocation was held in Carlsbad, May 19th–20th. Among the speakers were Carl Weeks of Des Moines, John Davis of Denver and G. H. Gertridge of San Francisco.

The officers for the ensuing year are: *President*, H. H. McAdoo of Carlsbad; *First Vice-President*, James Barrow; *Second Vice-President*, Mrs. E. K. Hilton, Socorro; *Secretary*, H. I. Braden, Carlsbad; *Treasurer*, Carl Moore, Clovis.

NEW YORK.

New York State Pharmaceutical Association held a successful meeting at Richfield Springs. Among the speakers of the convention were Samuel C. Henry, George W. Davis, assistant attorney general of the state of New York, and H. S. Noel of Indianapolis.

Otto Raubenheimer presented a historical paper on the National Formulary carrying its story through from the first edition to the present revision. The present U. S. P. formula of Solution of Magnesium Citrate came up for considerable criticism. A revision of Schedule C of the state pharmacy law was urged. The State Board of Pharmacy was requested to place a fine upon the licensed clerk in all cases where it is shown that the licensed clerk committed a violation without the knowledge of the proprietor. A four-year pharmacy course was commended with the provision that it be instituted when, in the opinion of the State Department of Education, such advance in requirements was found desirable.

The following officers were elected: *President*, Nicholas S. Gesoalde, Brooklyn; *First Vice-President*, Albert H. Muench, Syracuse; *Second Vice-President*, H. H. Miller, New Rochelle; *Third Vice-President*, John F. O'Brien, Rochester. Curt P. Wimmer, Wm. C. Anderson and Jacob Diner were elected delegates to the meeting of the AMERICAN PHARMACEUTICAL ASSOCIATION.

Secretary E. S. Dawson celebrated the 50th anniversary of his membership in New York State Pharmaceutical Association.

J. Leon Lascoff reported a number of joint meetings of physicians and pharmacists and suggested that booklets be prepared by the Association and supplied to students of medicine at the various medical schools in order to make them acquainted with N. F. and U. S. P. products.

PENNSYLVANIA.

President C. Leonard O'Connell, in his address, referred to the addition of 122 new members and meetings held with physicians and the four-year college course. The Association concurred in the establishment of a four-year course in pharmacy colleges, that Dr. Francis E. Stewart be elected to honorary life membership. Charles M. Boyd was elected an honorary member.

A large number of interesting papers were read. Among the speakers of the Convention were Samuel C. Henry, Dr. Wilmer Krusen, John C. Minehart and Robert J. Ruth.

The officers elected for the ensuing year are as follows: *President*, C. Leonard O'Connell, Pittsburgh, reëlected; *First Vice-President*, Henry Brown, Scranton; *Second Vice-President*, Raymond Hendrickson, Philadelphia; *Chairman of the Executive Committee*, Joseph W. England, Philadelphia.

TEXAS.

A feature of the fifty-first annual meeting of the Texas Pharmaceutical Association held in Houston was the day set apart for the program under the direction of the American Druggist. The contributors to that program were: Editor Mayes, New York; B. I. ("Bob") Eaton former Broadway actor, owner of four drug stores in Des Moines, Iowa; Charles McFarland, who continues the drug store founded in 1865 at "Dead Man's Gulch," Helena, Mont.; Miss Dorothy Cox, New York, writer on subjects relating to toilet preparations; Prof. Hugh Muldoon, dean of the college of pharmacy, University of Pittsburgh; Prof. Anton Hogstad, Jr., founder of the Model Prescription Shop, St. Louis, Mo.; Dean H. C. Newton, Creighton University College of Pharmacy, Omaha, Neb.; Dean H. V. Arny of Columbia University College of Pharmacy; Joseph Flower, veteran druggist of Richmond, Va., who has been successful in prize-winning show windows, and Mrs. Eva Snyder, housewife, of Louisville, Ky., whose letter on "The Job of the Wife of a Prescription Druggist," won first place in a contest sponsored by the *American Druggist*.

We hope there have been no omissions of names to the valuable and interesting program. Dean Muldoon spoke of the relations of the pharmacist and the retailer; Professor Hogstad of the possibilities in professional pharmacy; Dean Newton on finishing the prescription; Dean Arny presented interesting sketches of pharmacists Godbold, Hopp and Borell—in doing so he paid beautiful tributes to friends who had been an inspiration to him and influenced his life.

A criticism that might be offered to the program is that no time was given to discussion of the contributions.

The other transactions were full of interest and should be reported, but must be omitted for reasons heretofore indicated. The Association paid over the first thousand dollars to the Texas Fund which is to furnish the editorial rooms in the A. PH. A. Headquarters Building.

President Hein's address was comprehensive and stressed the importance of the AMERICAN PHARMACEUTICAL ASSOCIATION and strongly urged a larger membership in Texas. The Traveling Men's Auxiliary contributes largely to the entertainments. The Ladies' Auxiliary provide Scholarships for young women studying pharmacy in the University of Texas. The registration exceeded one thousand.

A State Veteran Druggists Association was organized, about fifty veterans being in attendance. Frater J. W. Graham of Austin was toasted as the oldest member in point of service.

The annual banquet of the Association was a brilliant affair at which about 1000 were seated. The toastmaster was Judge Ewing Boyd and the speakers J. T. Coulson of Dallas; Fred Alter, San Antonio; President Thomas Roach, of the N. A. R. D., Oklahoma City; E. G. Eberle, Baltimore.

Among the resolutions adopted was one calling on legislators to provide laws for curbing chain store operations. Closer coöperation of physicians and druggists was urged and the adoption of the code of ethics approved.

The following officers were elected: *President*, John B. Ray, Abilene; *First Vice-President*, E. B. Oliver, Longview; *Second Vice-President*, L. W. Brenner, Gonzales; *Secretary-Treasurer*, Walter D. Adams, Forney; *Home Secretary*, J. W. Graham, Austin; *Historian*, C. A. Duncan, Dallas.

C. C. Harris of Houston and A. H. Sealy of Ranger, were elected members of the Execu-

tive Committe; and Sol Feigelson, Houston; W. A. Charlton, Temple, and F. A. Cordel of El Paso, were elected members of the Board of Trustees.

Mrs. John D. Ray of Abilene heads the Ladies' Auxiliary of the Association.

President Hein was presented with a gavel made from the newel post of the old Maryland College of Pharmacy Building, a gift of members of the faculty and friends in Texas.

The writer is appreciative of the many courtesies extended; he was privileged to participate in the program on several occasions as delegate of the AMERICAN PHARMACEUTICAL ASSOCIATION.

UTAH.

Utah Pharmaceutical Association held a most interesting session at Cedar City. President Peterson gave a résumé of work being accomplished in Congress and by the state. He referred to the interest displayed at both the A. PH. A. meeting and the U. S. P. Convention. He referred in a kindly way to the contest for the next meeting of the A. PH. A. for which an invitation had been extended by Salt Lake City, but Miami was chosen. A further effort will be made to have the meeting of the A. PH. A. in Salt Lake City either in 1933 or 1934.

Salt Lake City was chosen for the 1931 convention and the following officers were elected: *President,* Horace S. Ensign, Ogden; *First Vice-President,* P. B. Van Orden, Lewistown; *Second Vice-President,* Dean Clark, St. George; *Secretary,* George F. Flashman, Salt Lake City; *Treasurer,* Eugene L. Wade, Salt Lake City.

VIRGINIA.

Among the speakers at the Virginia Pharmaceutical Association were Robert J. Ruth, New York City; Samuel C. Henry, Chicago; W. G. Crockett and Dr. Jonathan Day, Richmond. Edgar Warfield of Alexandria was elected *Honorary President* of the Association. He is in his eighty-eighth year and still active in business.

The fiftieth annual meeting of the Virginia Association will be held at Virginia Beach, with the Cavalier Hotel as Headquarters.

The officers elected for the ensuing year are: *President,* G. E. Heller, Bedford; *First Vice-President,* H. S. Falconer, Newport News; *Second Vice-President,* A. T. Gray, Farmville; *Third Vice-President,* E. V. Greever, Chilhowie; *Fourth Vice-President,* W. H. Hoover, Jr., Richmond; *Fifth Vice-President,* W. S. Nickilin, Alexandria; *Sixth Vice-President,* C. W. Powers, Roanoke; *Secretary-Treasurer,* A. L. I. Winne.

WEST VIRGINIA.

Among the speakers of the program of West Virginia State Pharmaceutical Association were Douglas Malloch, Chicago; Prof. G. A. Bergy, Morgantown; J. O. Crowley, Wheeling; Robert J. Ruth, New York City; Bernard N. Keene, Indianapolis.

Next year will be the silver anniversary meeting of West Virginia Association and this is to be held at Wheeling.

The officers elected for the ensuing year are: *President,* C. H. Goodykoontz, Bluefield; *First Vice-President,* G. H. Neale, Elkins; *Second Vice-President,* A. D. Conley, Huntington; *Third Vice-President,* Paul E. Hager, Monongah; *Secretary-Treasurer,* J. Lester Hayman, Morgantown.

WASHINGTON.

The attendance at the Washington Pharmaceutical Association meeting numbered about 250. President M. A. Weed gave a résumé of the activities of the State Association and the work that had been done. He commended Dean C. W. Johnson and Prof. H. A. Langenhan for representing the Association at the AMERICAN PHARMACEUTICAL ASSOCIATION meeting in Baltimore and at the Pharmacopœial Convention in Washington. President H. C. Christensen, of the A. PH. A., attended the meeting and addressed the Convention. He gave an account of the meeting in Baltimore and dwelt upon the importance of the A. PH. A. Headquarters to pharmacy.

The officers elected for the ensuing year are: *President,* R. L. Hunt, Everett; *District Governors:* A. D. Sloan, Yakima; W. P. Gray, Wilbur; G. H. Guy, Seattle; J. C. Carberry, Aberdeen; G. E. Finnegan, Bellingham; *Secretary,* Harry W. Ayres, Seattle; *Treasurer,* O. Thorstensen, Seattle.

(*To be continued*)

Correspondingly, greater good from the AMERICAN PHARMACEUTICAL ASSOCIATION will come through a larger membership; it is a body distinctively coöperative in its aims and purposes.